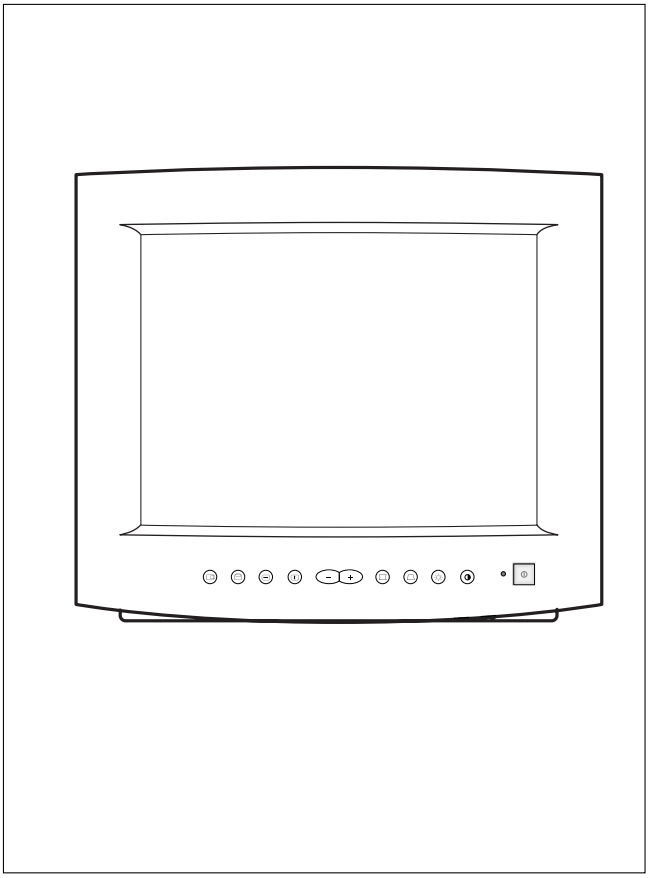
COLOR MONITOR

DP14LS
DP14LT
DP15LS
DP15LT

SERVICE Manual

COLOR MONITOR



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1 Precautions

1-1 Safety Precautions

WARNINGS

1. For continued safety, do not attempt to modify the circuit board.
2. Disconnect the AC power before servicing.
3. When the chassis is operating, semiconductor heatsinks are potential shock hazards.

1-1-1 Servicing the High Voltage VR and CRT :

WARNING: Damaged IC202 may cause excessive x-ray emissions.

1. When servicing the high voltage system, remove the static charge by connecting a 10 kohm resistor in series with an insulated wire (such as a test probe) between the chassis and the anode lead.
2. If the HV VR requires adjustment:
   This monitor does not need to adjust high voltage, high voltage step is saved at IC202, adjusting this high voltage to 24.5±0.5 kV - 14", 25.0±0.5 kV - 15".
3. When troubleshooting a monitor with excessively HV, avoid being unnecessarily close to the monitor. Do not operate the monitor for longer than is necessary to locate the cause of excessive voltage.
4. High voltage should always be kept at the rated value, no higher. Only when high voltage is excessive are X-rays capable of penetrating the shell of the CRT, including the lead in glass material. Operation at high voltages may also cause failure of the CRT or high voltage circuitry.
5. When the HV regulator is operating properly, there is no possibility of an X-ray problem. Make sure the HV does not exceed its specified value and that it is regulating correctly.
6. The CRT is especially designed to prohibit X-ray emissions. To ensure continued X-ray protection, replace the CRT only with one that is the same or equivalent type as the original.
7. Handle the CRT only when wearing shatterproof goggles and after completely discharging the high voltage anode.
8. Do not lift the CRT by the neck.

1-1-2 Fire and Shock Hazard :

Before returning the monitor to the user, perform the following safety checks:

1. Inspect each lead dress to make certain that the leads are not pinched or that hardware is not lodged between the chassis and other metal parts in the monitor.
2. Inspect all protective devices such as nonmetallic control knobs, insulating materials, cabinet backs, adjustment and compartment covers or shields, isolation resistor-capacitor networks, mechanical insulators, etc.
3. Leakage Current Hot Check (Figure 1-1):
   WARNING: Do not use an isolation transformer during this test.
   Use a leakage current tester or a metering system that complies with American National Standards Institute (*ANSI C101.1, Leakage Current for Appliances*), and Underwriters Laboratories (*UL Publication UL1410, 59.7*).
4. With the unit completely reassembled, plug the AC line cord directly into a 120V AC outlet. With the unit's AC switch first in the ON position and then OFF, measure the current between a known earth ground (metal water pipe, conduit, etc.) and all exposed metal parts, including: metal cabinets, screwheads and control shafts. The current measured should not exceed 0.5 milliamp. Reverse the power-plug prongs in the AC outlet and repeat the test.

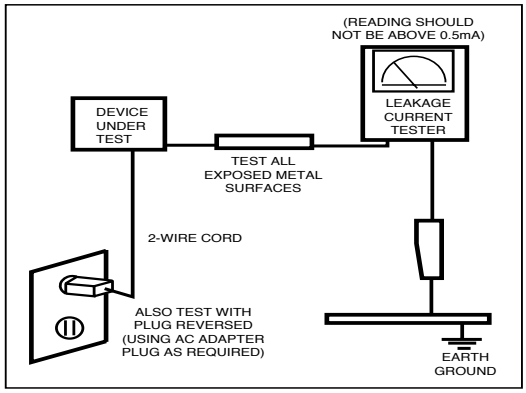

(READING SHOULD NOT BE ABOVE 0.5mA)
LEAKAGE CURRENT TESTER
DEVICE UNDER TEST
TEST ALL EXPOSED METAL SURFACES
2-WIRE CORD
ALSO TEST WITH PLUG REVERSED (USING AC ADAPTER PLUG AS REQUIRED)
EARTH GROUND

Figure 1-1. Leakage Current Test Circuit

1-1-4 Product Safety Notices

Some electrical and mechanical parts have special safety-related characteristics which are often not evident from visual inspection. The protection they give may not be obtained by replacing them with components rated for higher voltage, wattage, etc. Parts that have special safety characteristics are identified by ⚠ on schematics and parts lists. A substitute replacement that does not have the same safety characteristics as the recommended replacement part might create shock, fire and / or other hazards. Product safety is under review continuously and new instructions are issued whenever appropriate.

Components identified by ☢ on schematics and parts lists must be sealed by a soldering iron after replacement and adjustment.

1-2 Servicing Precautions

WARNING1: First read the "Safety Precautions" section of this manual. If unforeseen circumstances create conflict between the servicing precautions and safety precautions, always follow the safety precautions.

WARNING2: An electrolytic capacitor installed with the wrong polarity might explode.

1. Servicing precautions are printed on the cabinet, and should be followed closely.
2. Always unplug the unit's AC power cord from the AC power source before attempting to: (a) remove or reinstall any component or assembly, (b) disconnect PCB plugs or connectors, (c) connect all test components in parallel with an electrolytic capacitor.
3. Some components are raised above the printed circuit board for safety. An insulation tube or tape is sometimes used. The internal wiring is sometimes clamped to prevent contact with thermally hot components. Reinstall all such elements to their original position.
4. After servicing, always check that the screws, components and wiring have been correctly reinstalled. Make sure that the area around the serviced part has not been damaged.
5. Check the insulation between the blades of the AC plug and accessible conductive parts (examples: metal panels, input terminals and earphone jacks).
6. Insulation Checking Procedure: Disconnect the power cord from the AC source and turn the power switch ON. Connect an insulation resistance meter (500 V) to the blades of the AC plug.

   The insulation resistance between each blade of the AC plug and accessible conductive parts (see above) should be greater than 1 megohm.
7. Never defeat any of the +B voltage interlocks. Do not apply AC power to the unit (or any of its assemblies) unless all solid-state heat sinks are correctly installed.
8. Always connect a test instrument's ground lead to the instrument chassis ground *before* connecting the positive lead; always remove the instrument's ground lead last.

1-3 Electrostatically Sensitive Devices (ESD) Precautions

Some semiconductor (solid state) devices can be easily damaged by static electricity. Such components are commonly called Electrostatically Sensitive Devices (ESD). Examples of typical ESD devices are integrated circuits and some field-effect transistors. The following techniques will reduce the incidence of component damage caused by static electricity.

1. Immediately before handling any semiconductor components or assemblies, drain the electrostatic charge from your body by touching a known earth ground. Alternatively, wear a discharging wrist-strap device. To avoid a shock hazard, be sure to remove the wrist strap before applying power to the monitor.
2. After removing an ESD-equipped assembly, place it on a conductive surface such as aluminum foil to prevent accumulation of an electrostatic charge.
3. Do not use freon-propelled chemicals. These can generate electrical charges sufficient to damage ESDs.
4. Use only a grounded-tip soldering iron to solder or desolder ESDs.
5. Use only an anti-static solder removal device. Some solder removal devices not classified as "anti-static" can generate electrical charges sufficient to damage ESDs.
6. Do not remove a replacement ESD from its protective package until you are ready to install it. Most replacement ESDs are packaged with leads that are electrically shorted together by conductive foam, aluminum foil or other conductive materials.
7. Immediately before removing the protective material from the leads of a replacement ESD, touch the protective material to the chassis or circuit assembly into which the device will be installed.

   Caution: Be sure no power is applied to the chassis or circuit and observe all other safety precautions.
8. Minimize body motions when handling unpackaged replacement ESDs. Motions such as brushing clothes together, or lifting your foot from a carpeted floor can generate enough static electricity to damage an ESD.
9. ⚠ Indicates ESDs on the Schematic Diagram in this manual.

2 Product Specifications

2-1 Specifications

Item	Description	
Picture Tube:	14-Inch (36 cm); 13.2-Inch (33.5 cm) viewable, 90° Deflection, 15-Inch (38 cm); 13.8-Inch (35 cm) viewable, flat-face tube, 90° Deflection, 0.28 mm Dot pitch, Semi-tint, Non-glare, Antistatic silica coating, Invar shadow mask	
Scanning Frequency	Horizontal: 30 kHz to 55 kHz (Automatic) - 14" / 30 kHz to 61 kHz (Automatic) - 15" Vertical: 50 Hz to 120 Hz (Automatic)	
Display Colors	Unlimited colors	
Maximum Resolution	Horizontal : 1024 Dots Vertical : 768 Lines	
Input Video Signal	Analog, 0.7 Vp-p positive at 75 Ω, internally terminated	
Input Sync Signal	Separate Sync : TTL level positive/negative	
Maximum Pixel Clock	14" : 65 MHz, 15" : 80 MHz	
Active Display	14"	15"
Horizontal Vertical	255 mm ± 4 mm (4:3 ratio) 191 mm ± 4 mm	267 mm ± 4 mm (4:3 ratio) 200 mm ± 4 mm
Input Voltage	AC 90 to 264 Volts, 60 Hz/50 Hz ± 3 Hz	
Power Consumption	75 Watt (Max.)	
Dimensions	14"	15"
Unit (W x D x H) Carton (W x D x H)	13.70 x 14.65 x 14.49 Inches (348 x 372 x 368 mm) 16.61 x 18.11 x 15.35 Inches (422 x 460 x 390 mm)	14.25 x 15.12 x 15.12 Inches (362 x 384 x 384 mm) 17.87 x 19.57 x 17.52 Inches (454 x 497 x 445 mm)
Weight (Net/Gross)	14" : 23.4 lbs (10.6 kg) / 26.9 lbs (12.2 kg) 15" : 26.5 lbs (12.0 kg) / 31.5 lbs (14.3 kg)	
Environmental Considerations	Operating Temperature : 32°F to 104°F (0°C to 40°C) Humidity : 10 % to 80 % Storage Temperature : -4°F to 113°F (-20°C to 45°C) Humidity : 5 % to 95 %	

- This above Models complies with SWEDAC (MPR II) recommendations for reduced electromagnetic fields.
- Designs and specifications are subject to change without prior notice.

2-2 Pin Assignments

Sync Type / Pin No.	15-Pin Signal Cable Connector (Figure 2-1)
	Separate
1	Red
2	Green
3	Blue
4	GND
5	DDC Return
6	GND-R
7	GND-G
8	GND-B
9	Reserved
10	GND-Sync/Self-raster
11	GND
12	DDC Data
13	H-Sync
14	V-Sync
15	DDC Clock

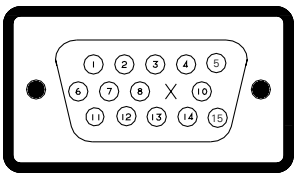


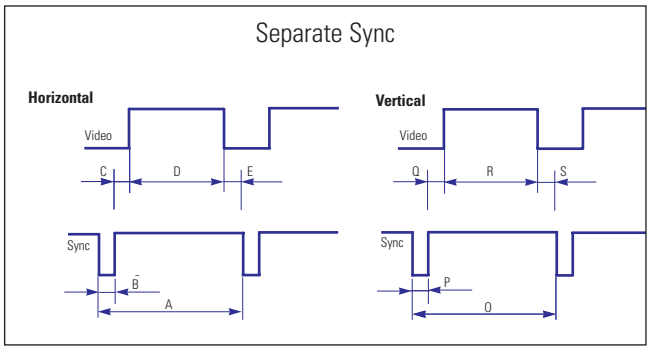
Figure 2-1. Male Type

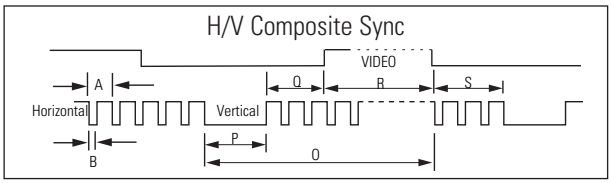
2-3 Timing Chart

This section of the service manual describes the timing that the computer industry recognizes as standard for computer-generated video signals.

Table 2-1. Timing Chart

Mode / Timing	IBM		VESA					
	720/70 Hz 720 x 400	640/60 Hz 640 x 480	640/75 Hz 640 x 480	640/85 Hz 640 x 480	800/75 Hz 800 x 600	800/85 Hz 800 x 600	1024/60 Hz 1024 x 768 (14")	1024/75 Hz 1024 x 768 (15")
fH (kHz)	31.469	31.469	37.500	43.269	46.875	53.674	48.363	60.023
A µsec	31.777	31.778	26.667	23.111	21.333	18.631	20.677	16.660
B µsec	3.813	3.813	2.032	1.556	1.616	1.138	2.092	13.003
C µsec	1.907	1.907	3.810	2.222	3.232	2.702	2.462	3.658
D µsec	25.422	25.422	20.317	17.778	16.162	14.222	15.754	13.206
E µsec	0.636	0.636	0.508	1.556	0.323	0.569	0.369	3.454
fV (Hz)	70.087	59.940	75.000	85.008	75.000	85.061	60.004	75.029
O msec	14.268	16.683	13.333	11.764	13.333	11.756	16.666	13.328
P msec	0.064	0.064	0.080	0.069	0.064	0.056	0.124	12.795
Q msec	1.080	1.048	0.427	0.578	0.448	0.503	0.600	0.533
R msec	12.711	15.253	12.800	11.093	12.800	11.179	15.880	12.812
S msec	0.413	0.318	0.027	0.023	0.021	0.019	0.062	0.516
Clock Frequency (MHz)	28.322	25.175	31.500	36.000	49.500	56.250	65.000	78.750
Polarity H.Sync	Negative	Negative	Negative	Negative	Positive	Positive	Negative	Positive
V.Sync	Positive	Negative	Negative	Negative	Positive	Positive	Negative	Positive
Remark	Separate	Separate	Separate	Separate	Separate	Separate	Separate	Separate





A : Line time total	B : Horizontal sync width	O : Frame time total	P : Vertical sync width
C : Back porch	D : Active time	Q : Back porch	R : Active time
E : Front porch		S : Front porch	

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3 Operating Instructions

3-1 Front View and Control

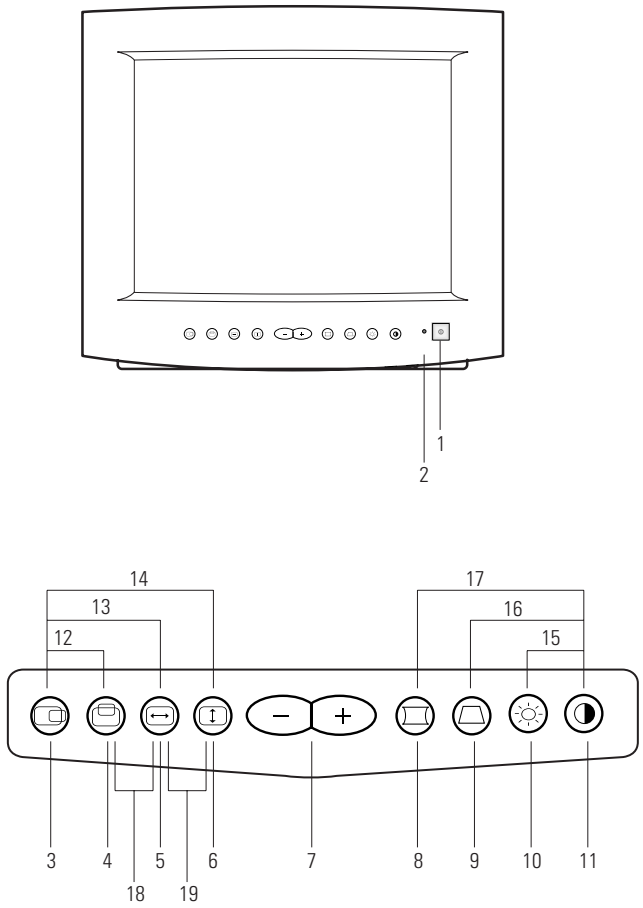

Figure 3-1. Front Control Panel

Table 3-1. Front Panel Controls

Location	Symbol	Description
1		Power Button
2		Power Indicator LED
3		Horizontal Position Button
4		Vertical Position Button
5		Horizontal Size Button
6		Vertical Size Button
7		Adjustment Buttons
8		Side Pincushion Button
9		Trapezoid Button
10		Brightness Control
11		Contrast Control
12	+	Parallelogram
13	+	V-Linearity
14	+	Pinbalance Button
15	+	Degauss
16	+	Recall
17	+	User Delete
18	+	Tilt (Option: 15")
19	+	V-Moire

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3 Operating Instructions

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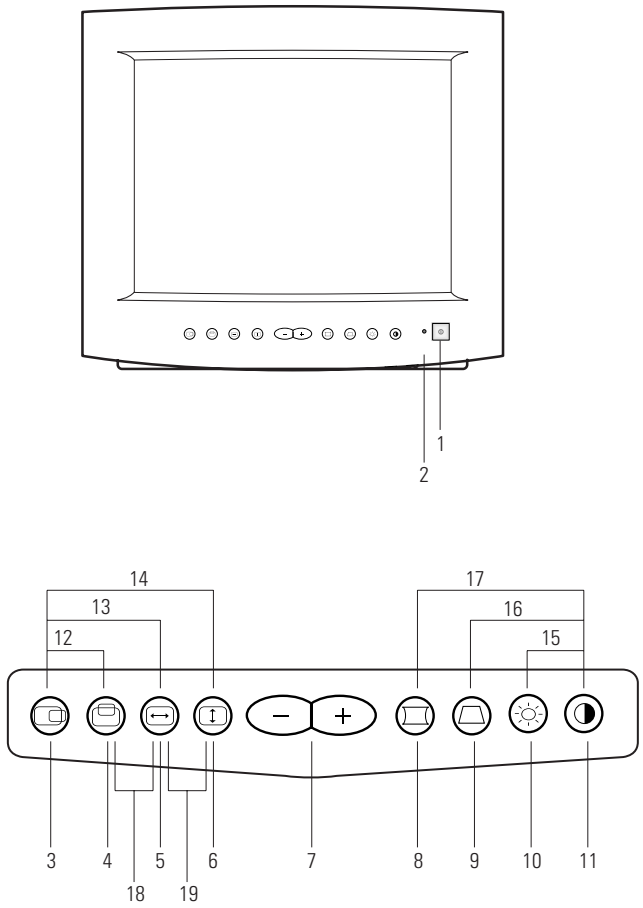

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14	+	Pinbalance Button
15	+	Degauss
16	+	Recall
17	+	User Delete
18	+	Tilt (Option: 15")
19	+	V-Moire

Memo

4 Disassembly and Reassembly

This section of the service manual describes the disassembly and reassembly procedures for the DP14L*/DP15L* monitors.

WARNING: This monitor contains electrostatically sensitive devices. Use caution when handling these components.

4-1 Disassembly

Cautions: 1. Disconnect the monitor from the power source before disassembly.
2. To remove the Rear Cover, you must use the special opening jig tool.

4-1-1 Cabinet Disassembly

1. With a pad beneath it, stand the monitor on its front with the screen facing downward and the base closest to you. Make sure nothing will damage the screen.
2. Remove the Stand from the monitor. (Refer to Stand manual)
3. Incline the monitor by lifting the rear of the monitor.

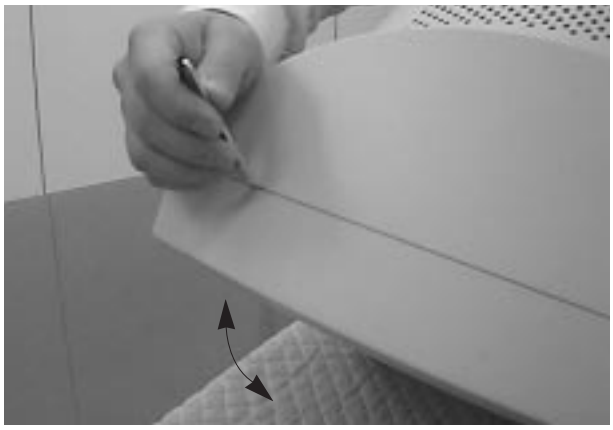

Figure 1

4. Push the Opening jig each groove along the top of the monitor till it makes a "ttak" sound. (2 grooves : Left and Right, Make sure each snap is disengaged.)

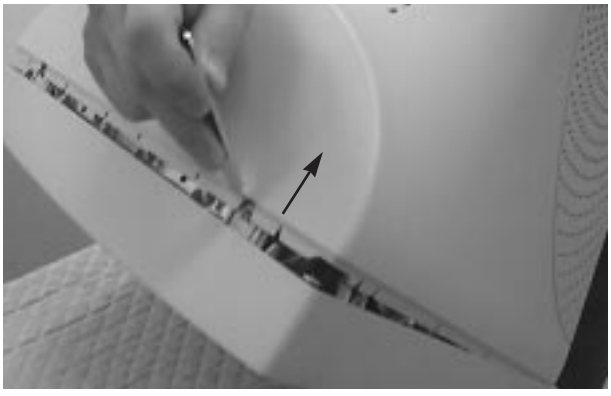

Figure 2

5. Squeeze the hold-snap on bottom of the monitor using your hand.

Figure 3

6. Insert the Opening jig into the groove then release the hold-snap.

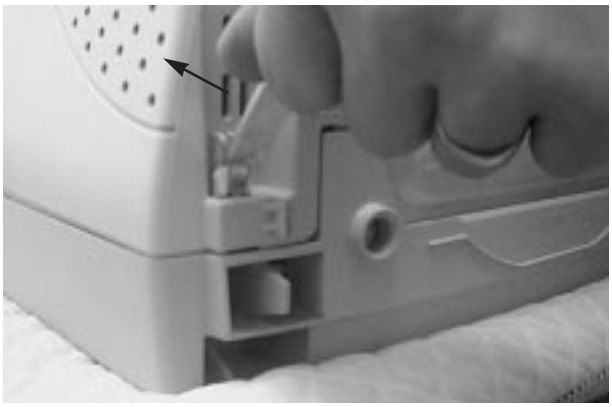

Figure 4

7. When the hold-snap release, lift the Rear Cover slightly to make sure it doesn't re-engage while you release the snap on the other side.

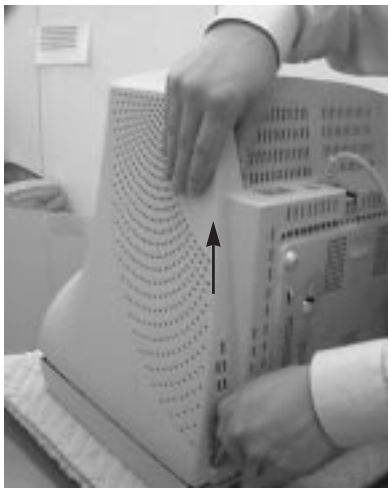

Figure 5

8. In a similar manner, Release the hold-snap on the opposite side.
9. Pull the Rear Cover up off the monitor.

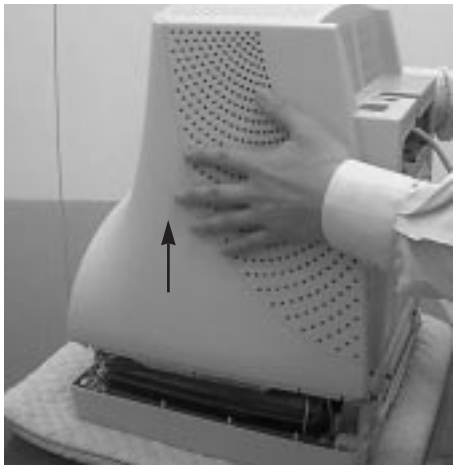

Figure 6

10. Using pinch-nose pliers or ling-nose pliers, acrefully disconnect the Anode Cap from the CRT.

Warning: **Do not touch the Anode contact on the CRT (High Voltage may remain).**

Note : If the hold-snap on the bottom of the Front Cover is broken, secure the cabinet by applying a 4x16 screw in the extra holes on each side of the cabinet.

Figure 7

Figure 8

4-1-2 Removing the CRT Socket PCB

1. Complete all previous steps.
2. Disconnect the CRT and Main PCB ground wires between the CRT Socket PCB and Shield Cover. (DP14LS only)
3. Lift up the Video Spring and remove the CRT Socket PCB from the CRT.

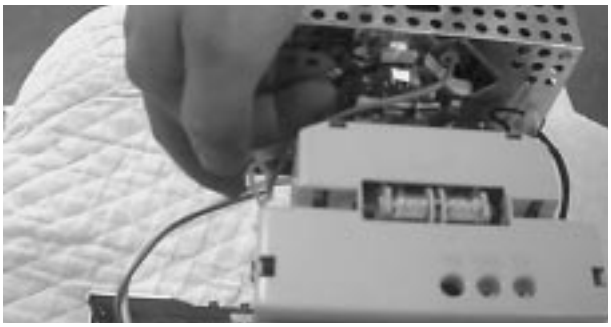

Figure 9

4. Disconnect all connectors on the CRT Socket PCB.
5. Using a solder iron, disconnect Ground (G2) on the back of the Video Shield and remove the Shield Cap.
6. Remove the screw on the front of the Shield Socket.
7. Desolder the 4 tabs on the CRT Socket PCB and remove Shield.
8. Place the Video PCB on a flat, level surface that is protected from static electricity.

4-1-3 Removing the Main PCB

1. Complete all previous steps.
2. Disconnect the Degaussing Coil at GT601 and GT602 on the Main PCB.
3. Disconnect all easily accessible ground wires on the Main PCB and Bottom Chassis.
4. Disconnect the DY connector at the CN303 connector on the Main .
5. Using the jig, release the snaps (2) connecting the Front Cover and Main PCB then lift up the Bottom to separate the two Shield.

Figure 10

6. Remove the screws on the back and along each side of the Bottom Chassis.
7. Carefully lift the Main PCB Ass'y and remove the remaining ground wires.
8. Place the Main PCB Ass'y on a flat, level surface that is protected from static electricity.

4-1-4 CRT Ass'y Disassembly

1. Complete all previous steps.
2. Straighten the Degaussing Coil Assembly coated metal ties and lift the Coil Ass'y from the CRT.
3. Remove the four corner screws and lift the CRT up and away from the Front Cover Assembly and place it on a padded surface.

Caution: Do not lift the CRT by the neck.

If you will be returning this CRT to the monitor, be sure to place the CRT face downward on a protective pad.

4-2 Reassembly

Reassembly procedures are in the reverse order of Disassembly procedures.

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5 Alignment and Adjustments

This section of the service manual explains how to make permanent adjustments to the monitor. Directions are given for adjustments using the monitor Interface Board Ver. 2.0 and software (Softjig).

5-1 Adjustment Conditions

Caution: Changes made without the SoftJig are saved only to the user mode settings. As such, the settings are not permanently stored and may be inadvertently deleted by the user.

5-1-1 Before Making Adjustments

5-1-1 (a) ORIENTATION

When servicing, always face the monitor to the east.

5-1-1 (b) MAGNETIC FIELDS

Whenever possible, use magnetic field isolation equipment such as a Helmholtz field to surround the monitor. If a Helmholtz field is not available, frequently degauss the unit under test.

Caution: Other electrical equipment may cause external magnetic fields which may interfere with monitor performance.

Use an external degaussing coil to limit magnetic build up on the monitor. If an external degaussing coil is not available, use the internal degaussing circuit. However, do not use the internal degaussing circuit more than once per 30 minutes.

5-1-1 (c) WARM-UP TIME

The monitor must be on for 30 minutes before starting alignment procedures. Warm-up time is especially critical in Color Temperature and White Balance adjustments.

5-1-1 (d) SIGNAL

Analog, 0.7 Vp-p positive at 75 ohm, internal termination
Sync: Separate
(TTL level negative/positive)

5-1-1 (e) SCANNING FREQUENCY

Horizontal:	30 kHz to 55 kHz (automatic) 14″
	30 kHz to 61 kHz (automatic) 15″
Vertical:	50 Hz to 120 Hz (automatic)

Unless otherwise specified, adjust at the 800 x 600 mode (H : 53.7 kHz, V: 85 Hz) -14″/15″ signals.

Refer to Table on page 2-3.

5-1-1 (f) +B 13 V LINE CHECK

No beam
Contrast: Maximum
Brightness: Maximum

Check the DC 13 V ± 0.2 V at Cathode of D616 Point and GND.

5-1-1 (g) HIGH VOLTAGE CHECK

No beam
Contrast: Maximum
Brightness: Maximum

Check the high voltage to 24.5 ± 0.5 kV - 14″, 25 ± 0.5 kV - 15″ at anode and GND.

5-1-1 (h) CENTER RASTER

Adjust VR501 so that the back raster comes to the center when you apply a signal of 60 kHz/75 Hz - 15″ .

5-1-1 (i) BRIGHTNESS AND CONTRAST

Unless otherwise specified, adjust brightness and contrast buttons:

Brightness: Maximum
(press ⊕ button until the LED is blink)
Contrast: Maximum
(press ⊕ button until the LED is blink)

5-1-2 Required Equipment

The following equipment may be necessary for adjustment procedures:

5-1-2 (a) DISPLAY CONTROL ADJUSTMENT

1. Non-metallic (–) screwdriver: 1.5 mm
   Non-metallic (–) screwdriver: 3 mm
2. Philips (+) screwdriver: 1.5 mm
3. Non-metallic hexkey: 2.5 mm
4. Digital Multimeter (DMM), or
   Digital Voltmeter (DVM)

5. Signal generator, or
   Computer with a video board that uses the ET-4000 chipset (strongly recommended if using Samsung DM 200 software) and that displays: 800 x 600 @ 85 Hz, or 800 x 600 @ 75 Hz (minimum).
6. Personal computer
7. Required software: Softjig.exe from Samsung, Samsung DM200, or DisplayMate for Windows from Sonera Technologies
8. Interface Board Ver. 2.0 Code No. BH81-90001K
9. Parallel communications cable (25-pin to 25-pin); Code No. BH81-90001H
10. Signal cable (15-pin to 15-pin cable with additional 3-pin connector); Code No. BH81-90001J
11. 5 V DC adapter, not supplied

Note: SoftJig Assembly (includes items 8, 9 and 10 Code No. BH81-90001L

5-1-2 (b) COLOR ADJUSTMENTS

1. All equipment listed in 5-1-2 (a), above
2. Color analyzer, or any luminance measurement equipment

5-1-3 Connecting the SoftJig

Connect the monitor to the signal generator and/or PC as illustrated in Figures 5-1 and 5-2.

Note: The signal cable connector which includes the 3-wire cable must connect to the monitor. If you use Setup 2 (PC only, no signal generator) you can only make adjustments to the signal timing available on that computer system. To make corrections to all factory timings requires the use of an additional signal generator.

5-1-4 After Making Adjustments

After finishing all adjustments, test the monitor in all directions. If, for example, the monitor does not meet adjustment specifications when facing north, reposition the monitor to face east and readjust. This time, try for an adjustment closer to the ideal setting within the tolerance range. Test the unit again in all directions. If the monitor again fails to meet specifications in every direction, contact your Regional After Service Center for possible CRT replacement.

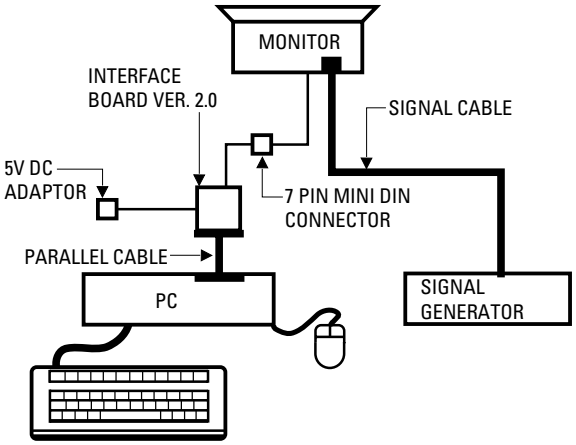


Figure 5-1. Setup 1, With Signal Generator

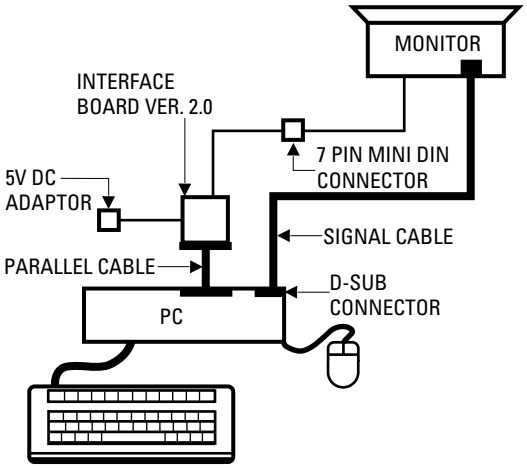


Figure 5-2. Setup 2, Without Signal Generator

5-2 Display Control Adjustments

5-2-1 Centering

Centering means to position the center point of the display in the middle of the display area. Horizontal size and position and vertical size and position control the centering of the display.

Adjust the horizontal size and vertical size to their optimal settings: 267 mm (H) x 200 mm (V) for 15″, 255 mm (H) x 191 mm (V) for 14″

Adjust the horizontal position and vertical position to within 4.0 mm of the center point of the screen.

l A - B l ≤ 5.0 mm.
l C - D l ≤ 5.0 mm.

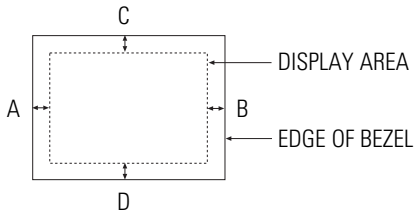


Figure 5-3. Centering

5-2-1 (a) HORIZONTAL MINIMUM SIZE ADJUSTMENT

CONDITIONS

Scanning frequency:	53.7 kHz/85 Hz
Display image:	Crosshatch pattern
Brightness:	Maximum
Contrast:	Maximum

PROCEDURE

Horizontal minimum size can be adjusted as follows using Softjig.

1. Display the timing 800 x 600/85 Hz.
2. Adjust horizontal size to minimum size using H_SIZE.
3. Adjust horizontal minimum size to 250 mm (15″) or 242 mm (14″) using H_SIZE MIN.
4. Adjust horizontal size to 267 mm (15″) or 255 mm (14″) using H_SIZE.
5. Press the ALL MODE SAVE horizontal minimum size for each timing is saved automatically.

If horizontal minimum size range cannot meet the spec, horiontal maximum size of 640 x 480/75 Hz including 800 x 600/60 Hz, 56 Hz, may be saturated or cannot overscan the bezel.

5-2-1 (b) VERTICAL SIZE ADJUSTMENT

CONDITIONS

Scanning frequency:	53.7 kHz/85 Hz
Display image:	Crosshatch pattern
Brightness:	Maximum
Contrast:	Maximum

Adjust the vertical size of the display pattern to 200 mm (15″) and 191 mm (14″).
(Tolerance: ± 3 mm.)

5-2-1 (c) HORIZONTAL POSITION ADJUSTMENT

CONDITIONS

Scanning frequency:	53.7 kHz/85 Hz
Display image:	Crosshatch pattern

PROCEDURE

Center the test pattern on the raster.

5-2-1 (d) VERTICAL POSITION ADJUSTMENT

CONDITIONS

Scanning frequency:	53.7 kHz/85 Hz
Display image:	Crosshatch pattern

Center the test pattern on the raster.

5-2-2 Linearity

Linearity affects the symmetry of images as they appear on the screen. Unless each row or column of blocks in a crosshatch pattern is of equal size, or within the tolerances shown in Tables 5-1 and 5-2, an image appears distorted, elongated or squashed.

The formular of linearity (%)

$$= \frac{2 \times (\text{Max} - \text{Min})}{\text{Max} + \text{Min}} \times 100$$

Table 5-1. Standard Modes Linearity: 800 x 600/85Hz

	Standard Timing Modes	
	Each block (10 %)	Difference between adjacent blocks (4 %)

Table 5-2. Other Modes Linearity: VGA, SVGA, XGA, MAC, etc.

	Supported Timing Mode	
	Each block (14 %)	Difference between adjacent blocks (5 %)

5-2-3 Trapezoid Adjustment

CONDITIONS

Scanning frequency: 53.7 kHz/85 Hz
Display image: Crosshatch pattern

Make the the test pattern rectangular.

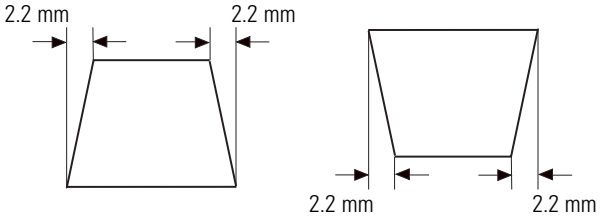


Figure 5-4. Trapezoid

5-2-4 Parallelogram Adjustment

CONDITIONS

Scanning frequency: 53.7 kHz/85 Hz (14"/15")
Display image: Crosshatch pattern

To activate the Parallelogram Adjustment function, push both the Horizontal Position and Vertical Position buttons and hold them in for longer than 3 seconds, or until the power indicator LED changes from green to blink and back to green.

Use the Increase (+) and Decrease (–) buttons to correct the display shape.

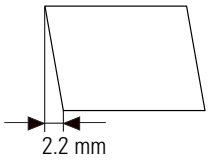


Figure 5-5. Parallelogram

5-2-5 Side Pincushion Adjustment

CONDITIONS

Scanning frequency: 53.7 kHz/85 Hz (14"/15")
Display image: Crosshatch pattern

After pushing the Side Pincushion button once, push the Increase (+) and Decrease (–) buttons to straighten the sides of the test pattern.

$| C1 |, | C2 | \leq 2.0$ mm, $| D1 |, | D2 | \leq 2.2$ mm.

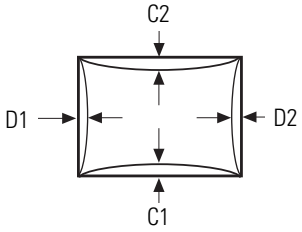


Figure 5-6. Pincushion

5-2-6 CRT Tilt Adjustment (Option)

TILT ADJUSTMENT (DP15L* With Tilt)

Push the V-Posi and H-Size simultaneously until Led blinks and back on again. Push the Increase (+) and Decrease (–) buttons to correct the Tilt.

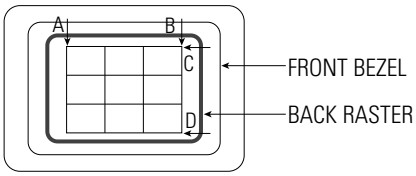


Figure 5-7. CRT Tilt Adjustment

5-2-7 Vertical Linearity Adjustment

To activate the vertical linearity adjustment, push both the horizontal position and horizontal size buttons and hold then in for longer than 3 seconds, or until the power indicator LED changes from green to blink and back to green.

Use the Increase (+) and Decrease (–) buttons to correct the display shape.

5-2-8 Pin Balance Adjustments

To activate the pin balacne function, push both the horizontal position and vertical Size buttons and hold then in for longer than 3 seconds, or until the power indicator LED changes from green to blink and back to green.

Use the Increase (+) and Decrease (–) buttons to correct the display shape.

5-2-9 Degauss

Push the contrast and brightness buttons simultaneously. The degaussing circuit can effectively function only once per 30 minutes. If available, use an external degaussing coil during servicing.

5-2-10 Delete User Mode Data

To delete the picture data from the user modes, push the contrast button and side pincushion button for 5 or more seconds simultaneously.

5-2-11 Recall

To delete the picture data from current user mode, push the contrast button and trapzoid button for 5 or more seconds simultaneoulsy.

5-3 Color Adjustments

Before making adjustments, check that the video signals are as follows:

Video : Analog, 0.7 Vp-p (at 75 Ω termination)
Sync : Separate TTL level
Unless otherwise specified, use 800 x 600 mode signal (53.7 kHz/85 Hz) for adjustments.

5-3-1 Color Coordinates (Temperature)

Color temperature is a measurement of the radiant energy transmitted by a color. For computer monitors, the color temperature refers to the radiant energy transmitted by white. Color coordinates are the X and Y coordinates on the chromaticity diagram of wavelengths for the visible spectrum.

CONDITIONS

Measurement instrument:	Color analyzer
Scanning frequency:	53.7 kHz/85 Hz
Display image:	White flat field at center of display area
Luminance:	Maximum

PROCEDURE

Using the directions in sections 5-3-2 through 5-3-5, adjust the Color Coordinates for 9300K to x = 0.283 ± 0.02 and y = 0.298 ± 0.02

5-3-2 Back Raster Color Adjustment

CONDITIONS

Measurement instrument:	Color analyzer
Scanning frequency:	53.7 kHz/85 Hz
Display image:	Back raster pattern
Brightness:	Maximum
Contrast:	Maximum

PROCEDURE

1. Adjust the Screen VR on the FBT so that the brightness of the Back Raster is 0.3 to 0.5 ft-L (typically 0.4 ft-L).
2. Adjust the G_CUT to center.
3. Adjust the B_CUT to set the "y" coordinate to 0.298 ± 0.02.
4. Adjust the R_CUT to set the "x" coordinate to 0.283 ± 0.02.

Note: If the above adjustments cannot be done to each coordinate, adjust G_CUT to increase or decrease the green cutoff and repeat procedures 3 and 4.

5-3-3 Video Gain Adjustment

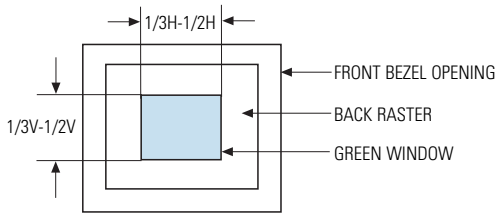


Figure 5-8. Green Box Pattern

CONDITIONS

Measurement instrument:	Color analyzer
Scanning frequency:	53.7 kHz/85 Hz
Display image:	Green box pattern within range for which the ABL circuit is not active (1/3 to 1/2H and 1/3 to 1/2V).
Brightness:	Maximum
Contrast:	Maximum

PROCEDURE

1. Adjust G-Gain so that the brightness of the green gain is 40 ± 1 ft-L (typically 40 ft-L).

5-3-4 White Balance Adjustment

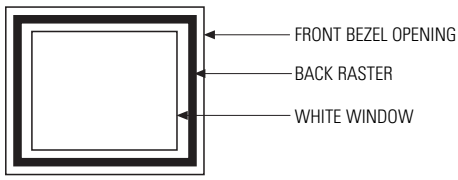


Figure 5-9. Full White Pattern

CONDITIONS

Measurement instrument:	Color analyzer
Scanning frequency:	53.7 kHz/85 Hz
Display image:	Full white pattern
Brightness:	Maximum
Contrast:	Maximum

PROCEDURE

1. Display the full white pattern.
2. Adjust R-Gain and B-Gain so that the video is white.
(x = 0.283 ± 0.02 and y = 0.298 ± 0.02)

5-3-5 White Balance Fine Adjustment

CONDITIONS

Measurement instrument:	Color analyzer
Scanning frequency:	53.7 kHz/85 Hz
Display image:	Full white pattern
X-Y coordinates:	x = 0.283 ± 0.02
	y = 0.298 ± 0.02

PROCEDURE

1. Adjust the Contrast control so that the brightness of the video is about 5 ft-L.
2. Check whether the white coordinates of the video meet the specification above. If they do not, adjust them so that they do.
3. Adjust the Contrast to maximum luminance.
4. Check whether the white coordinates still meet the specification above. If they do not, adjust them so that they do.

5-3-6 ABL Point Adjustment

CONDITIONS

Measurement instrument:	Color analyzer
Scanning frequency:	53.7 kHz/85 Hz
Display image:	Full white pattern
Brightness:	Maximum
Contrast:	Maximum

PROCEDURE

Adjust ABL so that the brightness level is 35 ± 1 ft-L.

5-3-7 Focus Adjustment

CONDITIONS

Measurement instrument:	Color analyzer
Scanning frequency:	53.7 kHz/85 Hz
Display image:	"H" character pattern
Brightness:	Maximum
Contrast:	Maximum

PROCEDURE

1. Adjust the Focus VR on the FBT to display the sharpest image possible.
2. Use Locktite to seal the Focus VR in position.

5-3-8 Luminance Uniformity Check

CONDITIONS

Measurement instrument:	Color analyzer
Scanning frequency:	53.7 kHz/85 Hz
Display image:	White flat field
Brightness:	Cut off point at 30 ft-L

PROCEDURE

Measure luminance at nine points on the display screen: top left corner, top center, top right corner, center row left side, center, center row right side, bottom left corner, bottom center, and bottom right corner.

5-3-9 Color Purity Adjustment

Color purity is the absence of undesired color. Conspicuous mislanding (unexpected color in a uniform field) within the display area shall not be visible at a distance of 50 cm from the CRT surface.

CONDITIONS

Orientation:	Monitor facing east
Scanning frequency:	53.7 kHz/85 Hz
Display image:	White flat field
Luminance:	Cutoff point at the center of the display area

Caution: Color purity adjustments should only be attempted by qualified personnel.

PROCEDURE

For trained and experienced service technicians only.

Use the following procedure to correct minor color purity problems:

1. Make sure the display is not affected by external magnetic fields. Use an external degaussing coil to neutralize magnetic fields which may be affecting color purity.
2. Very carefully break the glue seal between the 2-pole purity convergence magnets (PCM), the band and the spacer .
3. Make sure the spacing between the PCM assembly and the CRT stem is 22.5 mm ± 1 mm.
4. Display a red pattern over the entire display area.
5. Adjust the Purity Magnet Rings on the PCM assembly to display a pure green pattern. (Optimal setting: x = x = 0.283 ± 0.02, y = 0.298 ± 0.02)
6. Repeat steps 4 and 5 using a red pattern and then again, using a blue pattern.

Table 5-3. Color Purity Tolerances

Red:	x = 0.625 ± 0.015	y = 0.340 ± 0.015
Green:	x = 0.310 ± 0.015	y = 0.592 ± 0.015
Blue:	x = 0.150 ± 0.015	y = 0.063 ± 0.015

(For 9300K white color adjustment: x = 0.283 ± 0.02, y = 0.298 ± 0.02)

7. When you have the PCMs properly adjusted, carefully gule them together with Locktite to prevent their movement during shipping.

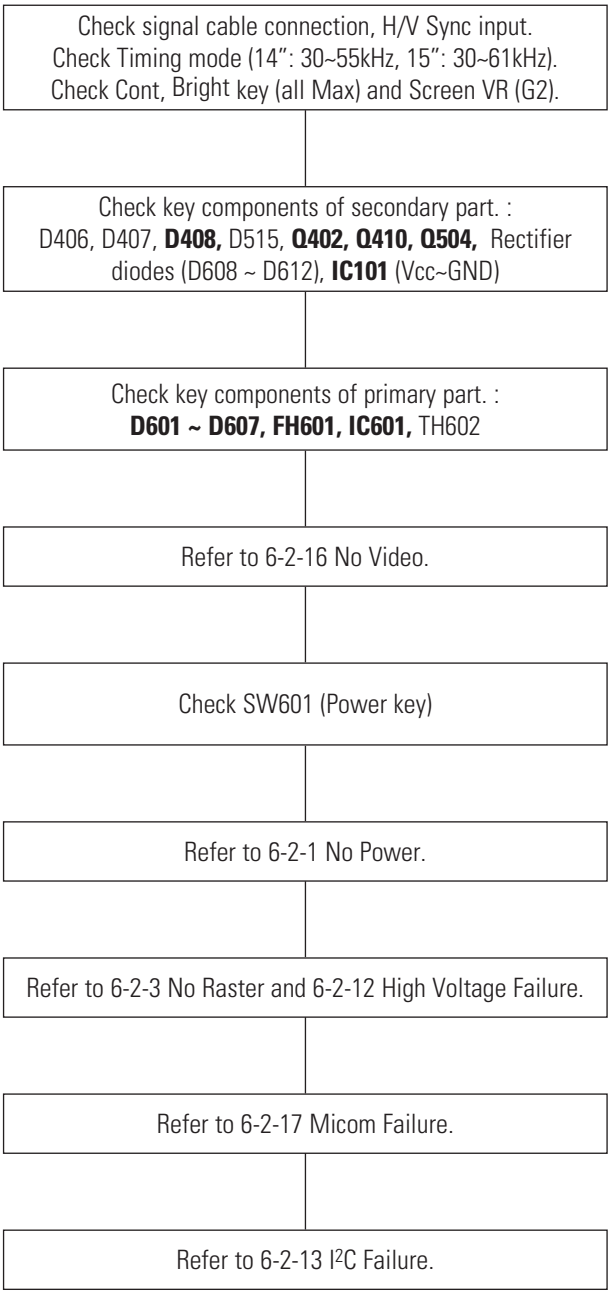
6 Troubleshooting

6-1 General Troubleshooting

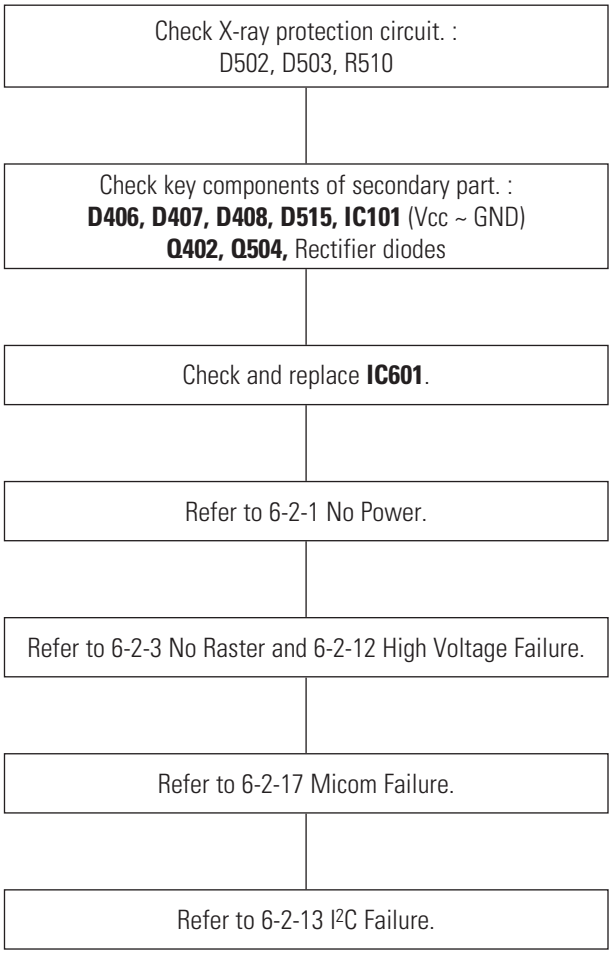
Notes: 1. If a picture does not appear, fully rotate the brightness and contrast controls clockwise and reinspect.

2. Check the following circuits.
   - No raster appears: Power circuit, Horizontal output circuit, H/V control circuit, and H/V output circuit.
   - High voltage develops but no raster appears: Video output circuits.
   - High voltage does not develop: Horizontal output circuits.

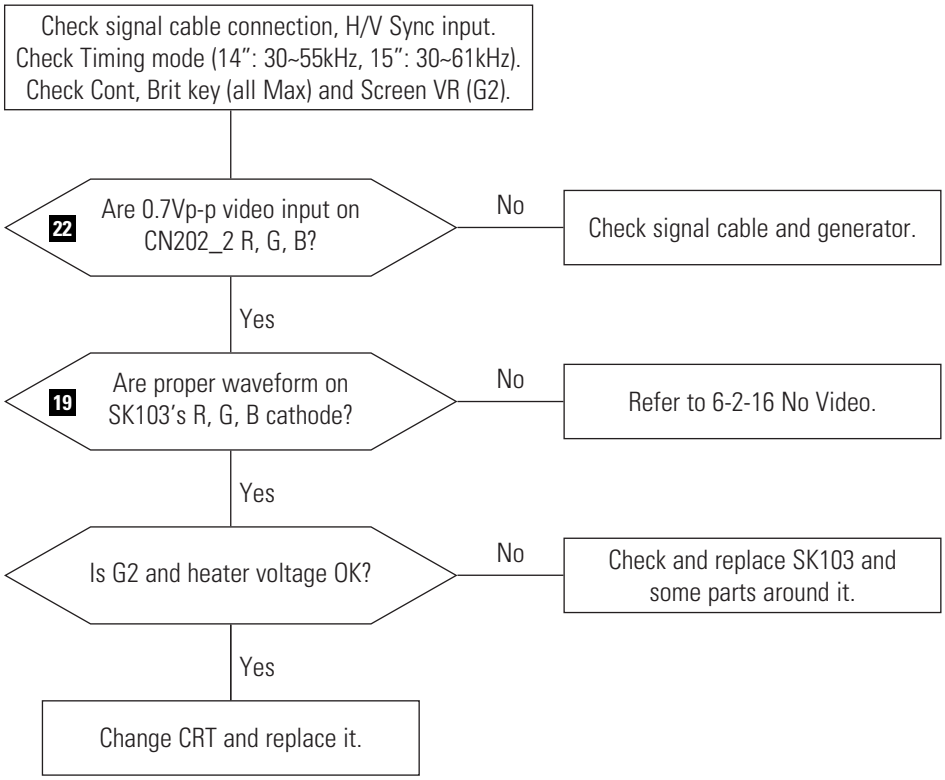
6-1-1 No Picture


Check signal cable connection, H/V Sync input.
Check Timing mode (14": 30~55kHz, 15": 30~61kHz).
Check Cont, Bright key (all Max) and Screen VR (G2).
Check key components of secondary part. :
D406, D407, **D408,** D515, **Q402, Q410, Q504,** Rectifier diodes (D608 ~ D612), **IC101** (Vcc~GND)
Check key components of primary part. :
D601 ~ D607, FH601, IC601, TH602
Refer to 6-2-16 No Video.
Check SW601 (Power key)
Refer to 6-2-1 No Power.
Refer to 6-2-3 No Raster and 6-2-12 High Voltage Failure.
Refer to 6-2-17 Micom Failure.
Refer to 6-2-13 I2C Failure.

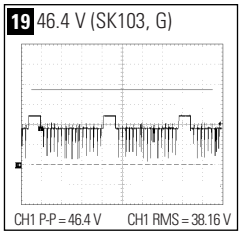
6-1-2 Shut Down

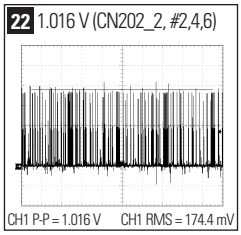

Check X-ray protection circuit. :
D502, D503, R510
Check key components of secondary part. :
D406, D407, D408, D515, IC101 (Vcc ~ GND)
Q402, Q504, Rectifier diodes
Check and replace **IC601**.
Refer to 6-2-1 No Power.
Refer to 6-2-3 No Raster and 6-2-12 High Voltage Failure.
Refer to 6-2-17 Micom Failure.
Refer to 6-2-13 I2C Failure.

6-1-3 No Video or Missing Colors

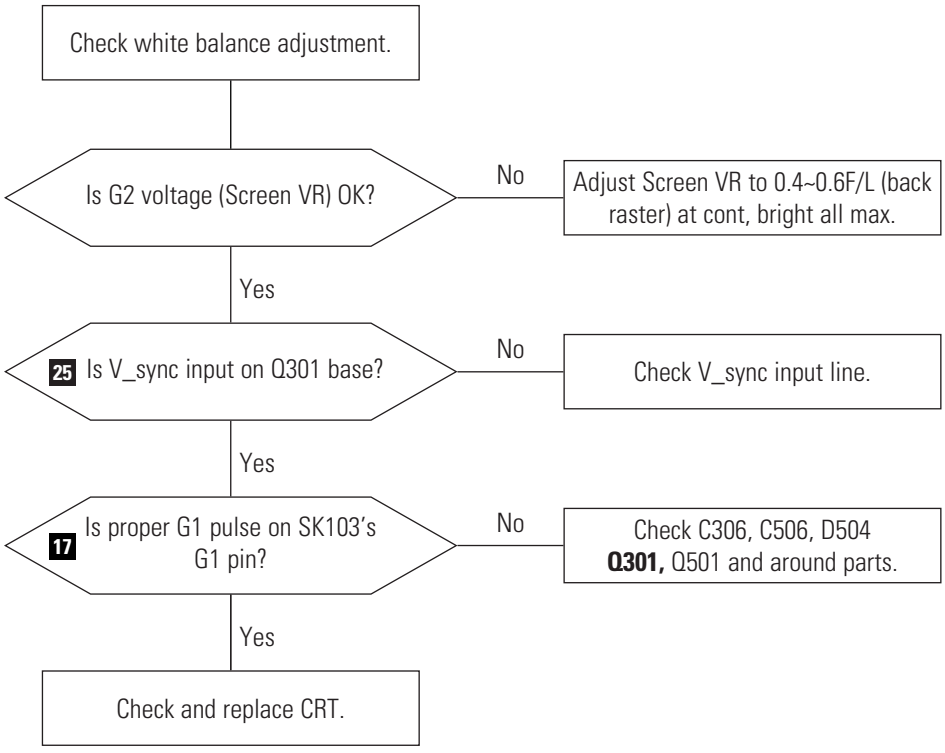

Check signal cable connection, H/V Sync input.
Check Timing mode (14": 30~55kHz, 15": 30~61kHz).
Check Cont, Brit key (all Max) and Screen VR (G2).
22 Are 0.7Vp-p video input on CN202_2 R, G, B?
No
Check signal cable and generator.
Yes
19 Are proper waveform on SK103's R, G, B cathode?
No
Refer to 6-2-16 No Video.
Yes
Is G2 and heater voltage OK?
No
Check and replace SK103 and some parts around it.
Yes
Change CRT and replace it.

WAVEFORMS

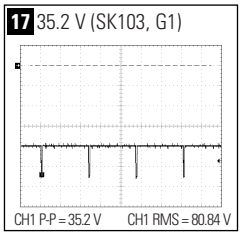


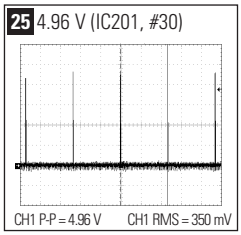


6-1-4 Visible Retrace

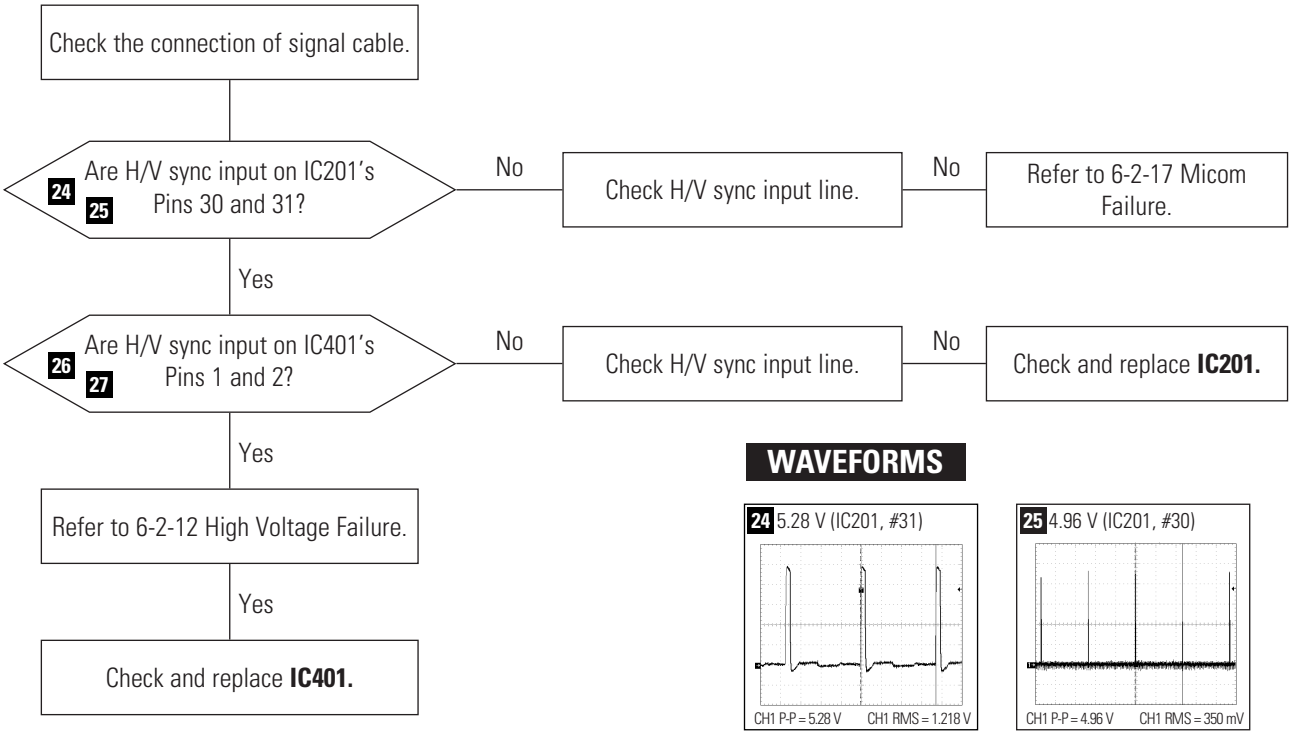

Check white balance adjustment.
Is G2 voltage (Screen VR) OK?
No
Adjust Screen VR to 0.4~0.6F/L (back raster) at cont, bright all max.
Yes
25 Is V_sync input on Q301 base?
No
Check V_sync input line.
Yes
17 Is proper G1 pulse on SK103's G1 pin?
No
Check C306, C506, D504 Q301, Q501 and around parts.
Yes
Check and replace CRT.

WAVEFORMS

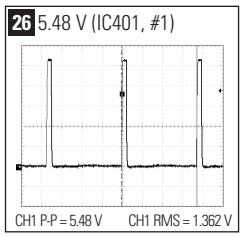


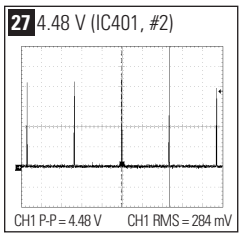


6-1-5 Unsynchronized image

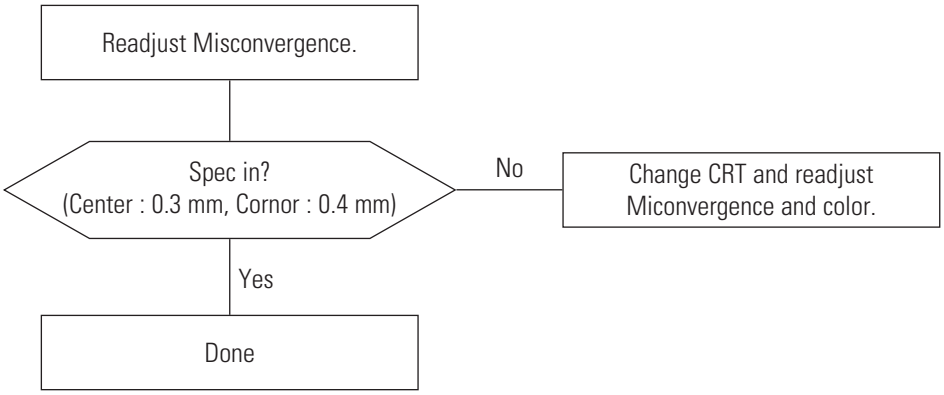

Check the connection of signal cable.
24 25 Are H/V sync input on IC201's Pins 30 and 31?
No
Check H/V sync input line.
No
Refer to 6-2-17 Micom Failure.
Yes
26 27 Are H/V sync input on IC401's Pins 1 and 2?
No
Check H/V sync input line.
No
Check and replace IC201.
Yes
Refer to 6-2-12 High Voltage Failure.
Yes
Check and replace IC401.

WAVEFORMS

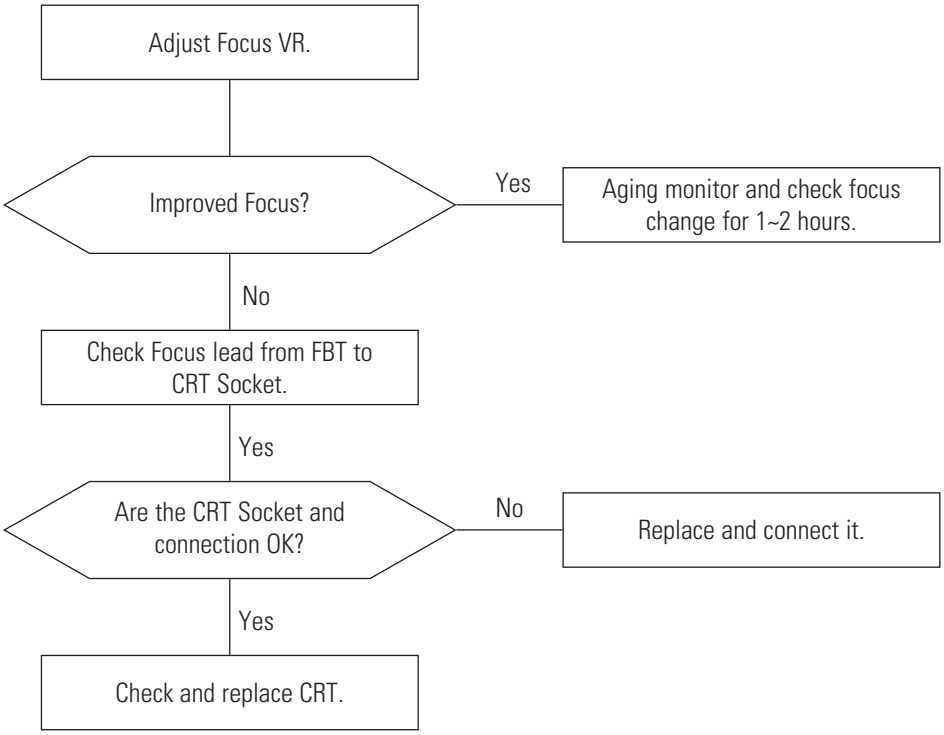




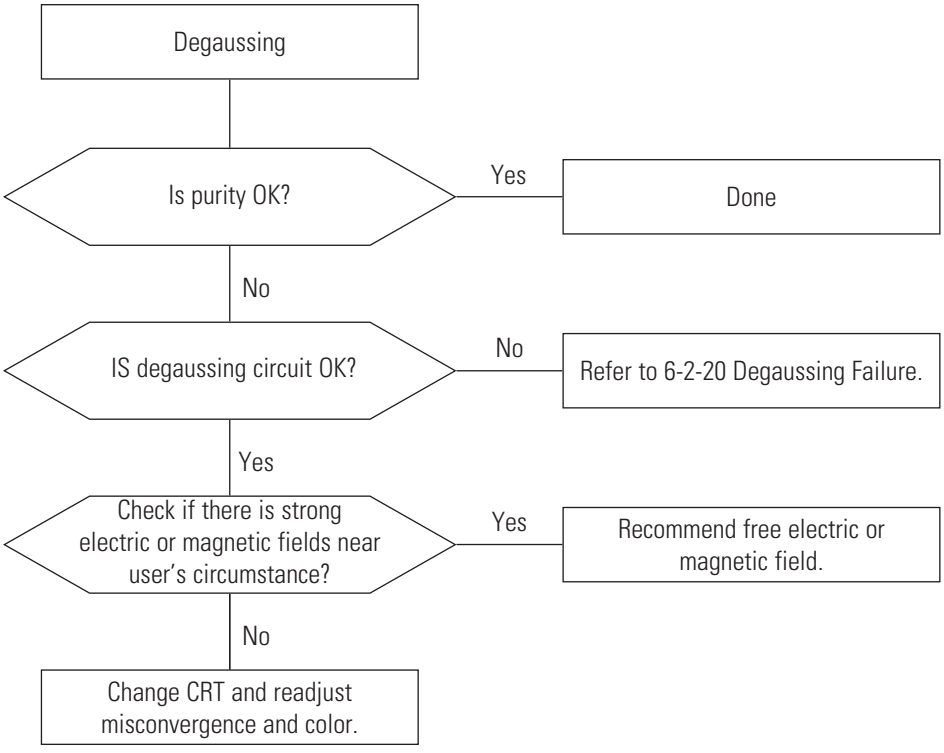
6-1-6 Misconvergence



6-1-7 Poor Focus



6-1-8 Purity Failure

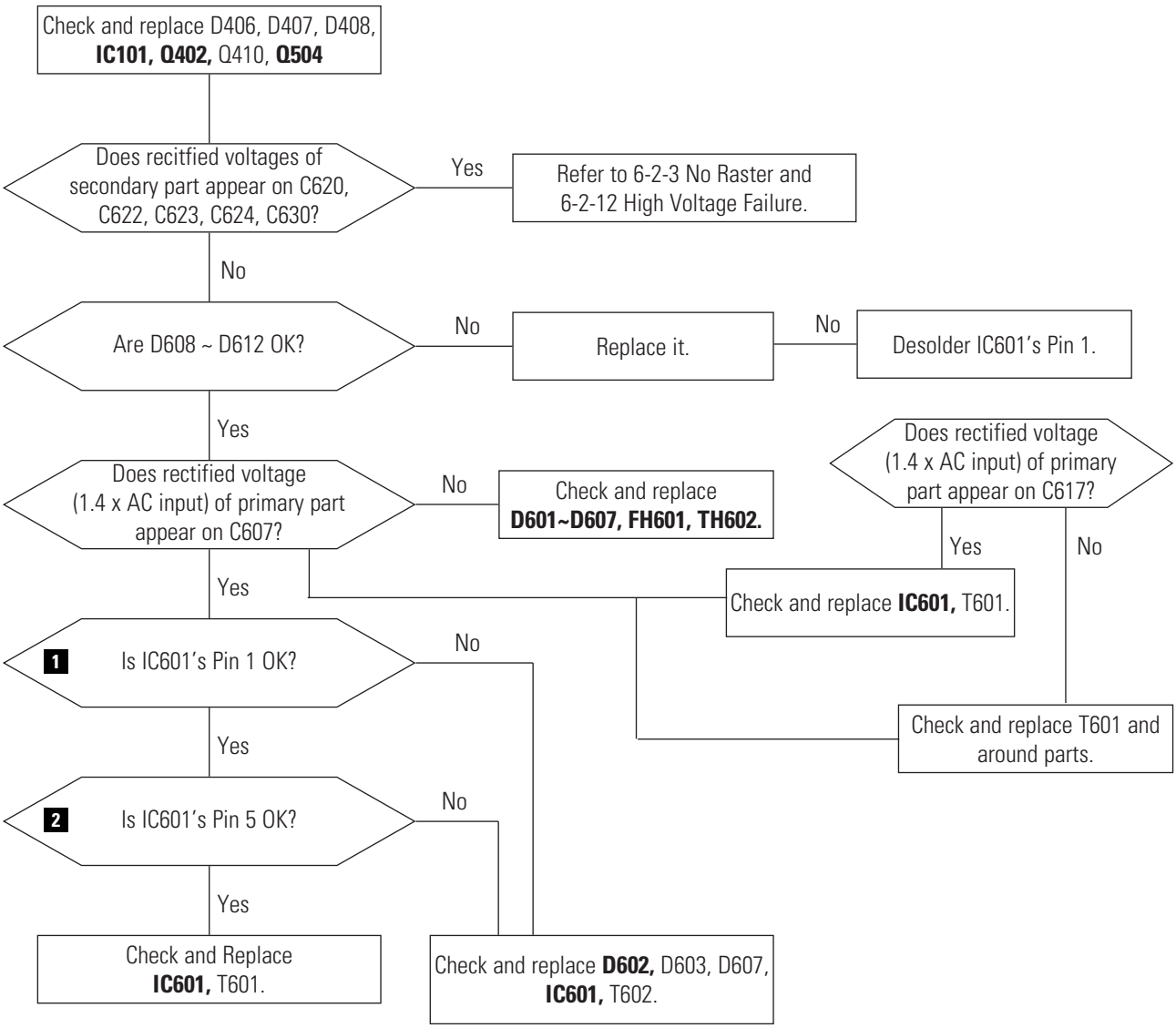


6-2 Detail Repair Section

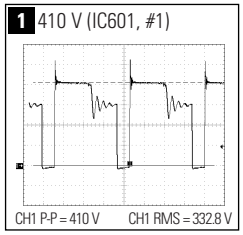
Notes: 1. If a picture does not appear

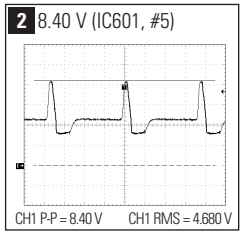
check first
- if AC power cord is plugged or not,
- if signal cable is connected or not,
- if signal generator (PC) is operated well or not (DPMS mode)
- if the Timing mode is out of spec or not (14": 30~55 kHz, 15": 30~61 kHz)

6-2-1 No Power


Check and replace D406, D407, D408, **IC101, Q402,** Q410, **Q504**
Does recitfied voltages of secondary part appear on C620, C622, C623, C624, C630?
Yes
Refer to 6-2-3 No Raster and 6-2-12 High Voltage Failure.
No
Are D608 ~ D612 OK?
No
Replace it.
No
Desolder IC601's Pin 1.
Yes
Does rectified voltage (1.4 x AC input) of primary part appear on C607?
No
Check and replace **D601~D607, FH601, TH602.**
Does rectified voltage (1.4 x AC input) of primary part appear on C617?
Yes
No
Yes
Check and replace **IC601,** T601.
1 Is IC601's Pin 1 OK?
No
Check and replace T601 and around parts.
Yes
2 Is IC601's Pin 5 OK?
No
Yes
Check and Replace **IC601,** T601.
Check and replace **D602,** D603, D607, **IC601,** T602.

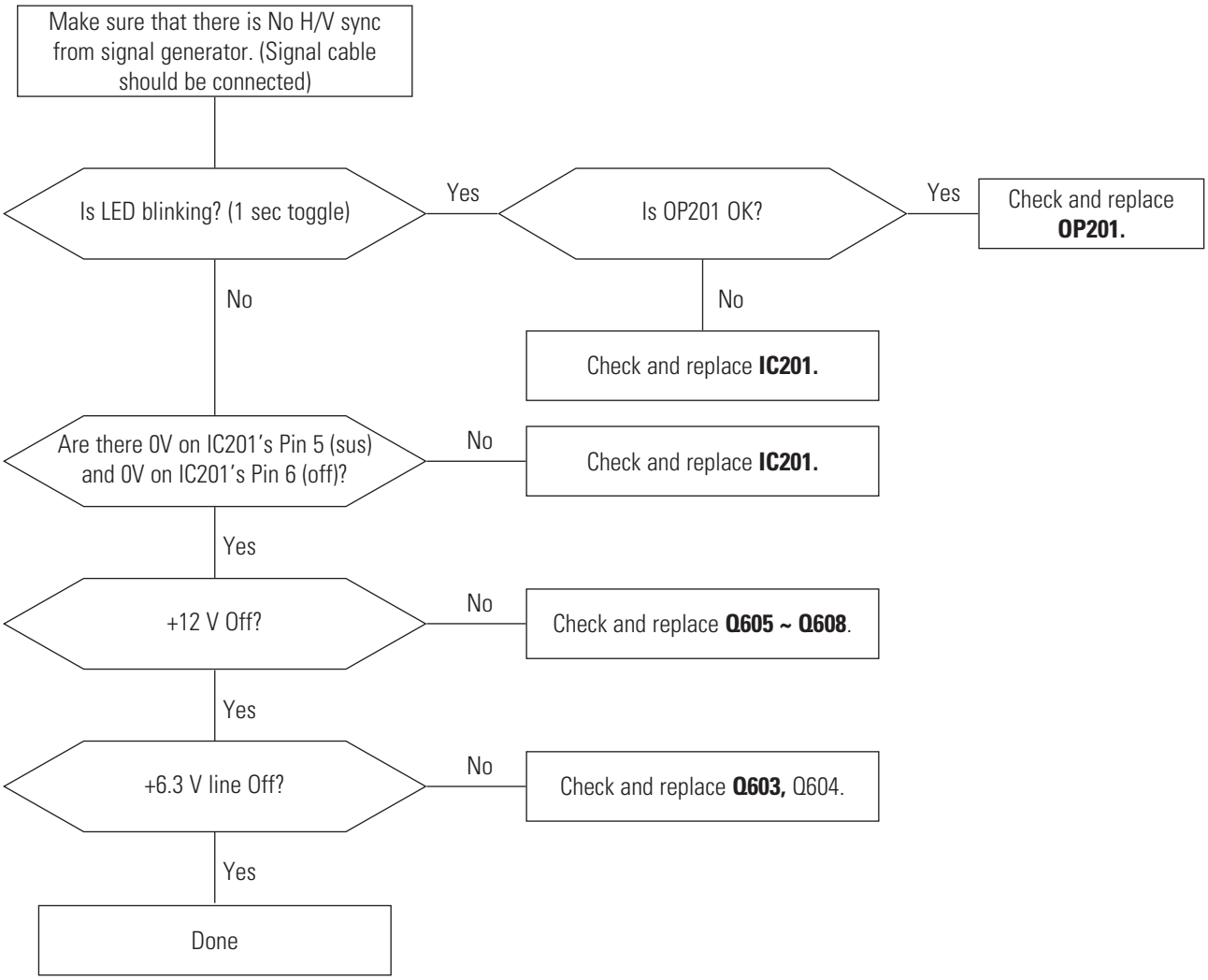
WAVEFORMS



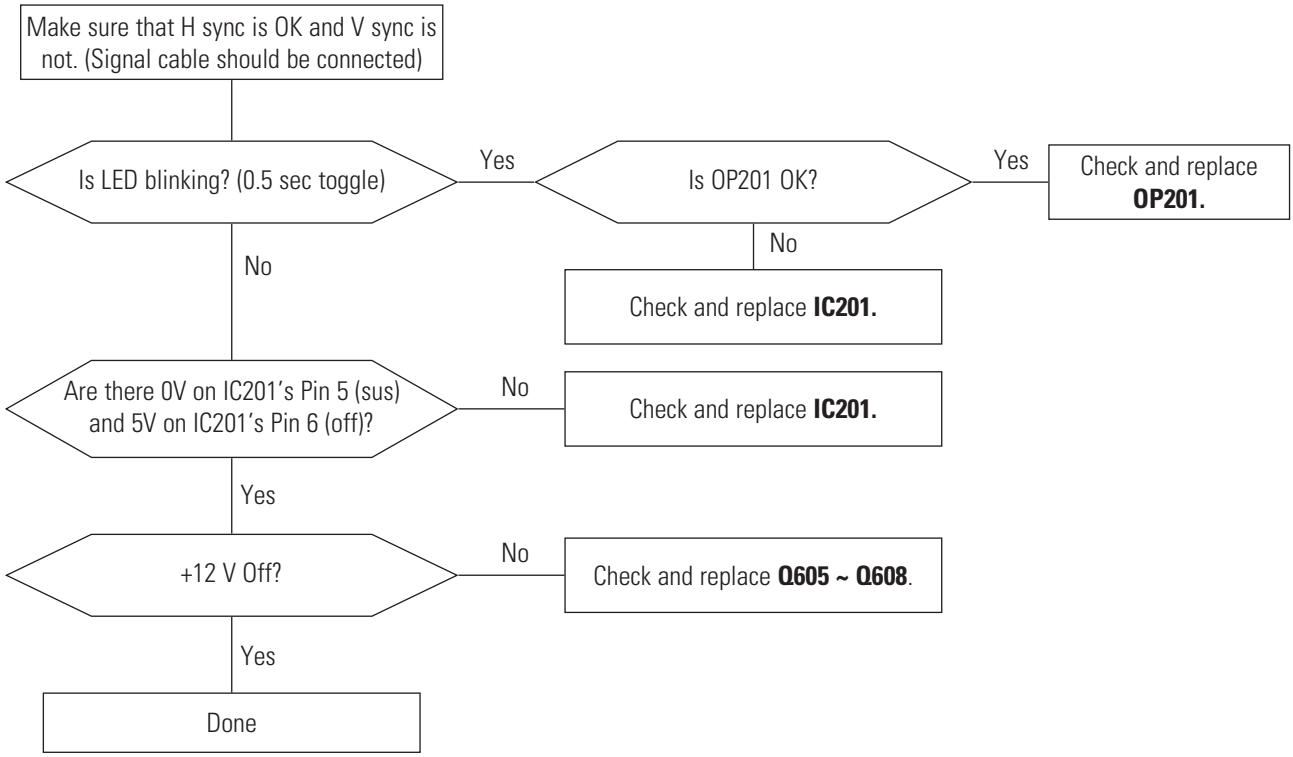


6-2-2 DPMS Failure

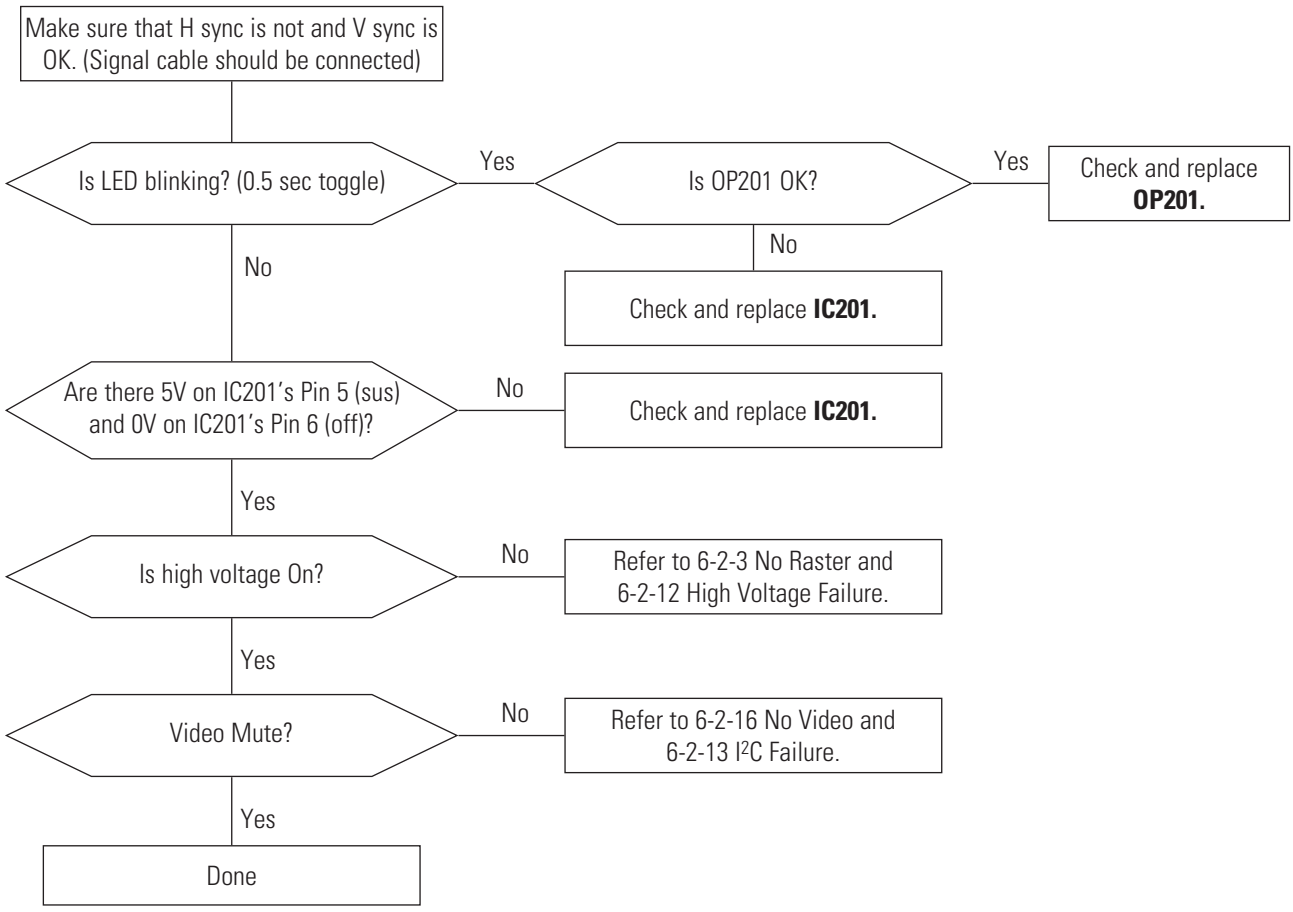
6-2-2 (a) Off Mode (No H/V sync)



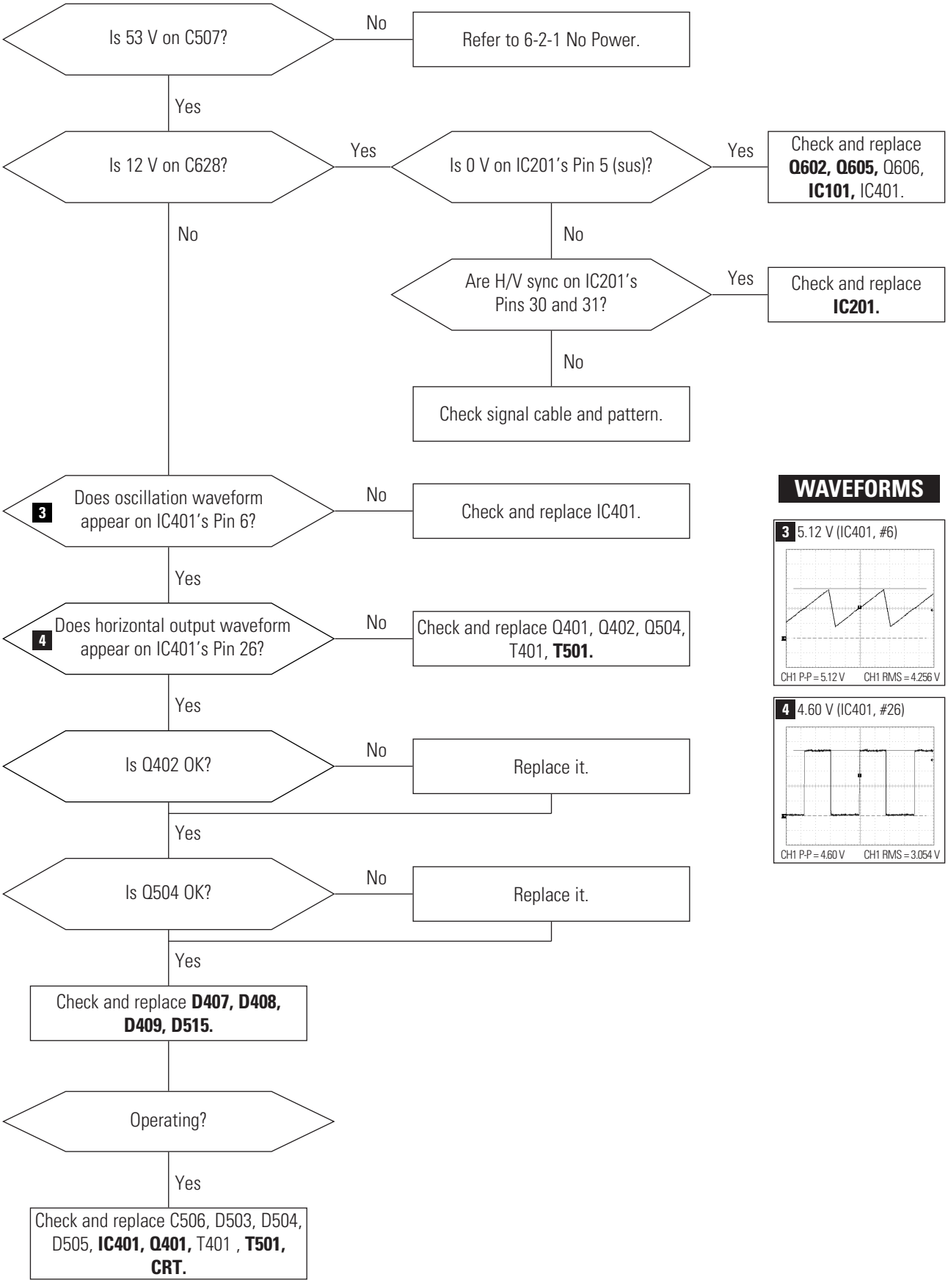
6-2-2 (b) Suspend Mode (H sync: OK, V sync: No)



6-2-2 (c) Stand-by Mode (H sync: No, V sync: OK)


Make sure that H sync is not and V sync is OK. (Signal cable should be connected)
Is LED blinking? (0.5 sec toggle)
Yes
Is OP201 OK?
Yes
Check and replace OP201.
No
Check and replace IC201.
No
Are there 5V on IC201's Pin 5 (sus) and 0V on IC201's Pin 6 (off)?
No
Check and replace IC201.
Yes
Is high voltage On?
No
Refer to 6-2-3 No Raster and 6-2-12 High Voltage Failure.
Yes
Video Mute?
No
Refer to 6-2-16 No Video and 6-2-13 I2C Failure.
Yes
Done

6-2-3 No Raster : No Raster means (Power: OK, High Voltage: No)



WAVEFORMS

6-2-4 S-correction Failure

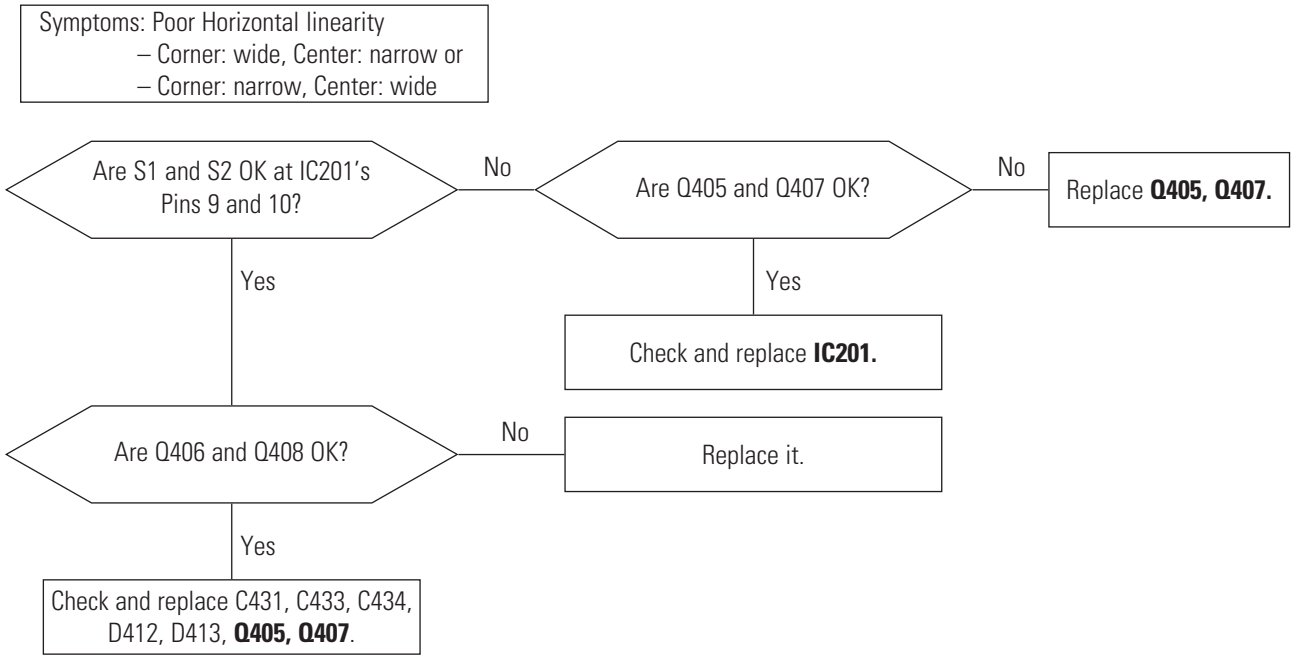
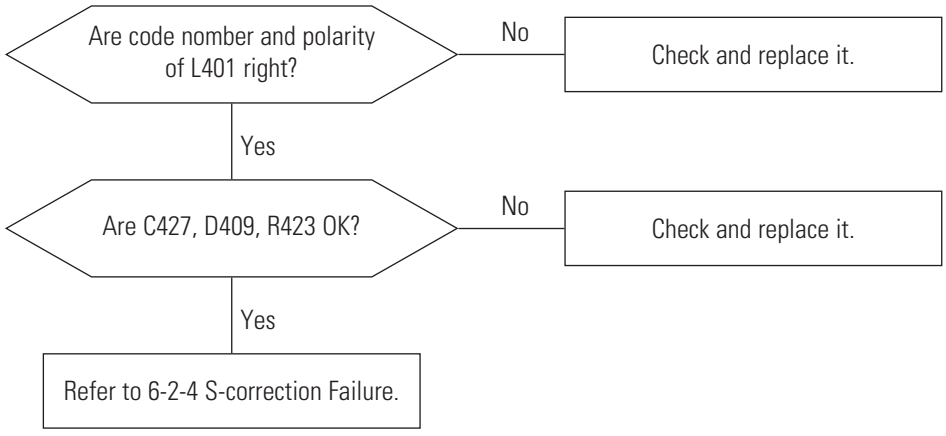


Table 6-1.

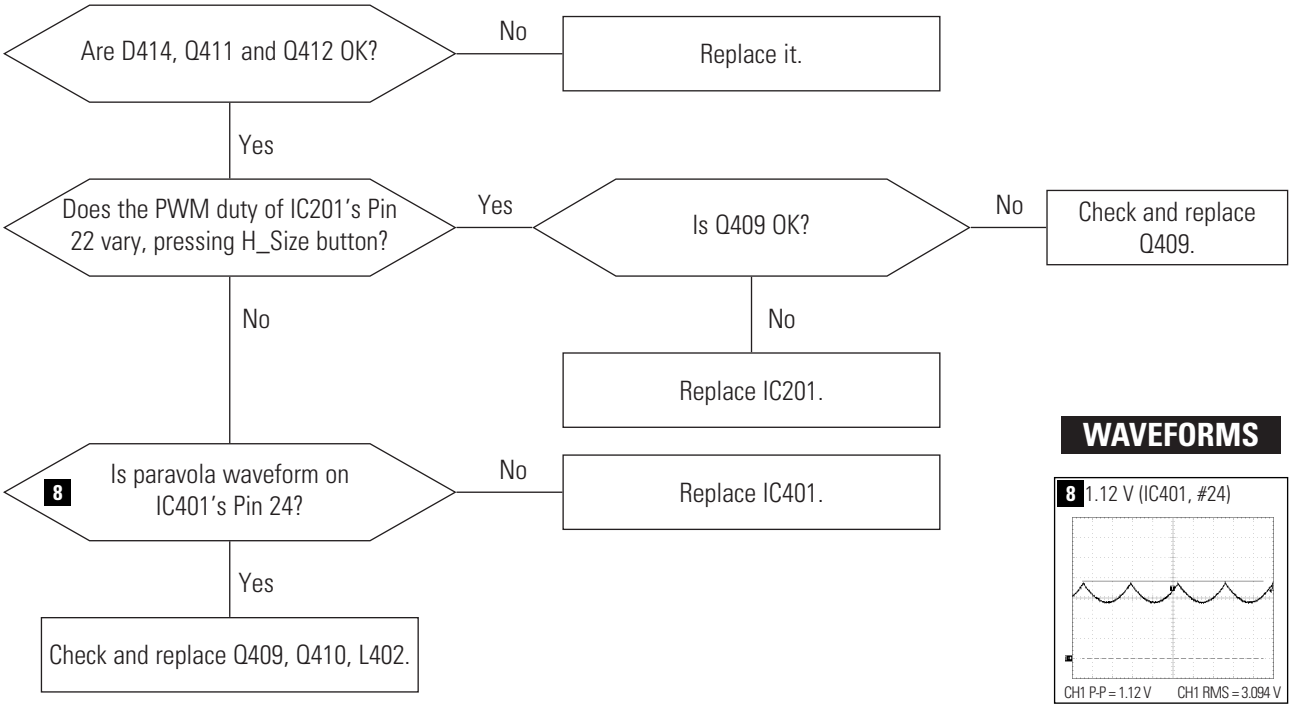
	31 ~ 35	35 ~ 40	40 ~ 49	49 ~ 61
S1	0 V	0 V	5 V	5 V
S2	0 V	5 V	0 V	5 V

* As CRT vendor and inch, there are differential items like C431, C433, C434, L401, R231, R441.
If you want to change a PCB board to another one that is for different CRT and inch, you have to change differential items at schematic diagram.

6-2-5 H-Linearity Failure

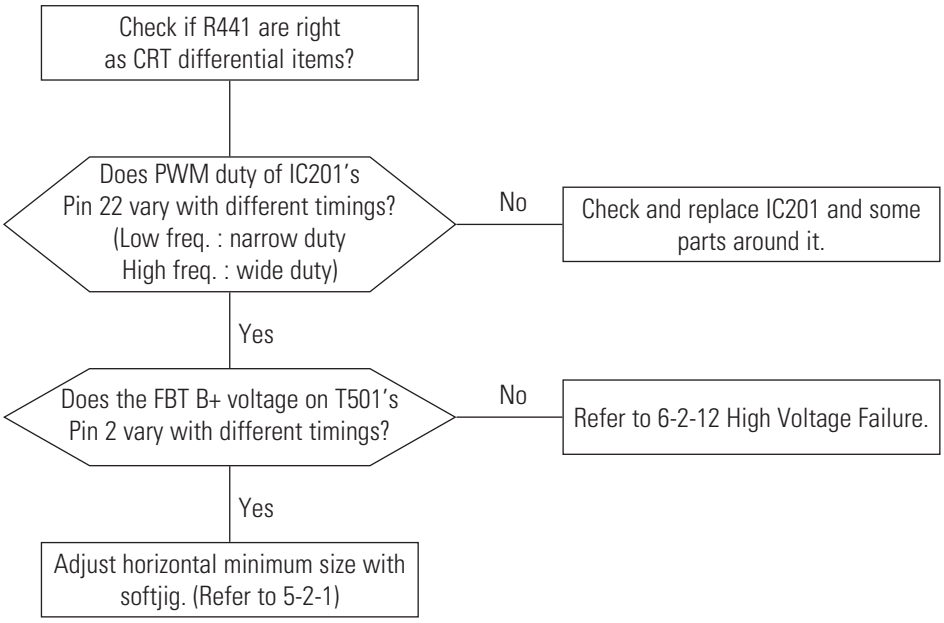


6-2-6 Invariable H_Size

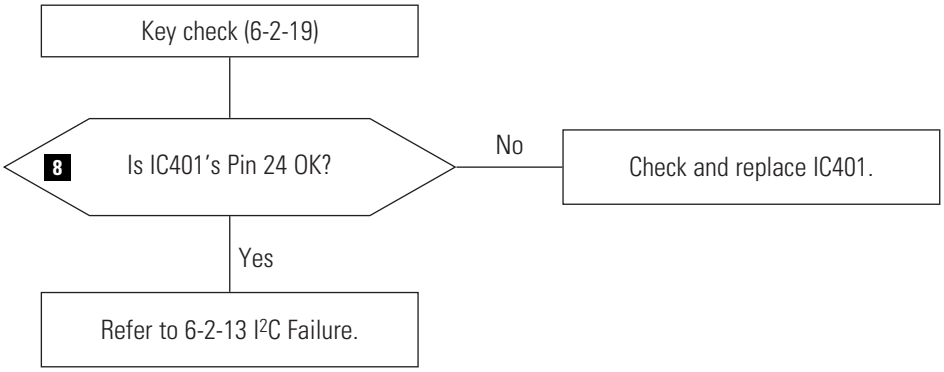


WAVEFORMS

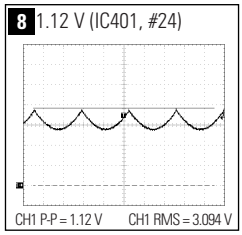
6-2-7 Abnormal H_Size


Check if R441 are right as CRT differential items?
Does PWM duty of IC201's Pin 22 vary with different timings? (Low freq. : narrow duty High freq. : wide duty)
No
Check and replace IC201 and some parts around it.
Yes
Does the FBT B+ voltage on T501's Pin 2 vary with different timings?
No
Refer to 6-2-12 High Voltage Failure.
Yes
Adjust horizontal minimum size with softjig. (Refer to 5-2-1)

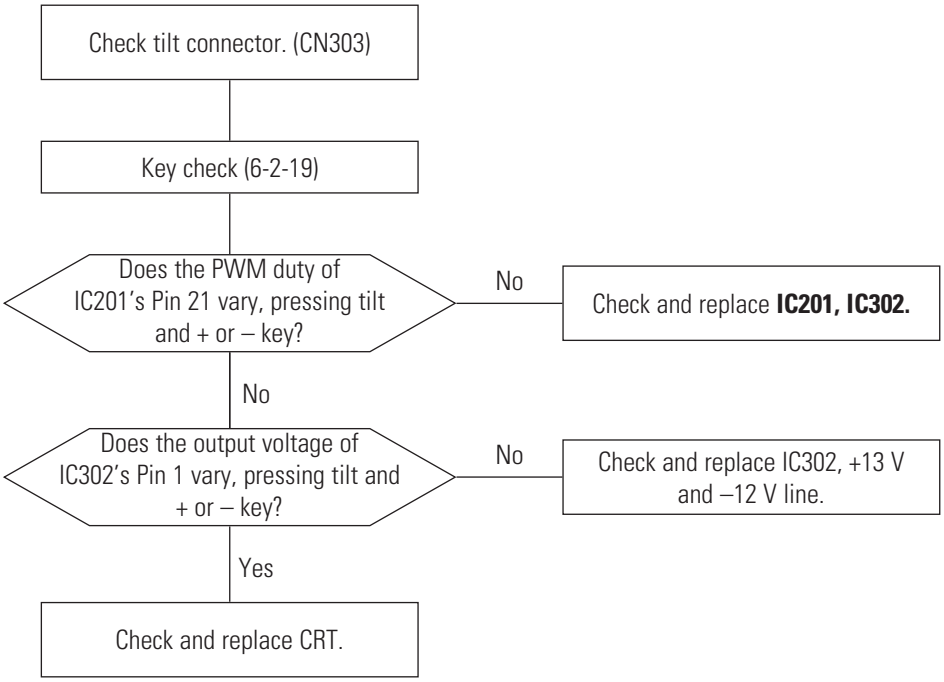
6-2-8 S_Pin, Trap, Para, V_Lin, Pin_Bal Failure



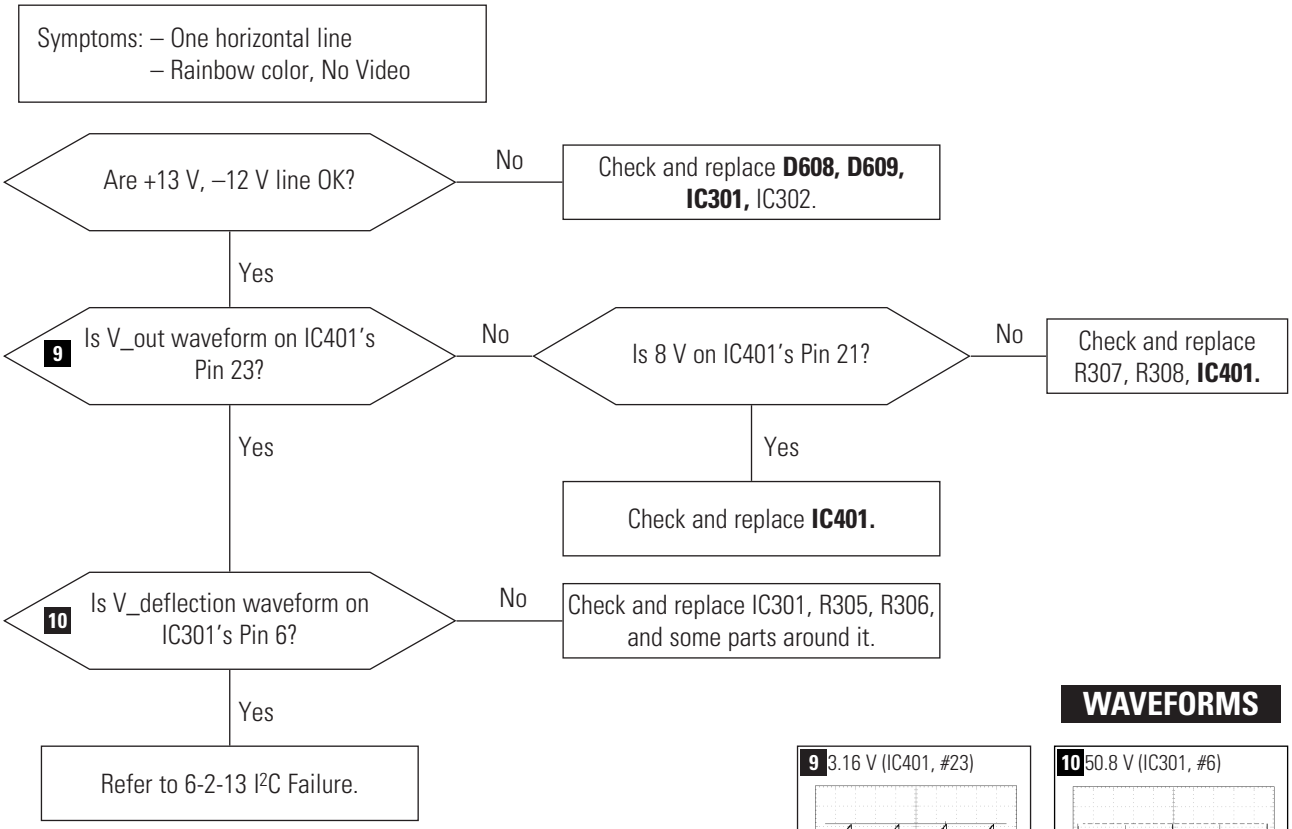
WAVEFORMS



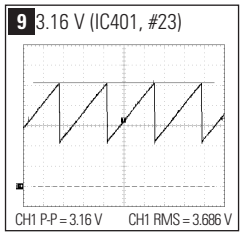
6-2-9 Tilt Failure

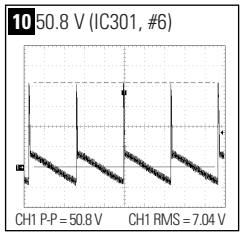

Check tilt connector. (CN303)
Key check (6-2-19)
Does the PWM duty of IC201's Pin 21 vary, pressing tilt and + or – key?
No
Check and replace IC201, IC302.
No
Does the output voltage of IC302's Pin 1 vary, pressing tilt and + or – key?
No
Check and replace IC302, +13 V and –12 V line.
Yes
Check and replace CRT.

6-2-10 Vertical Deflection Failure

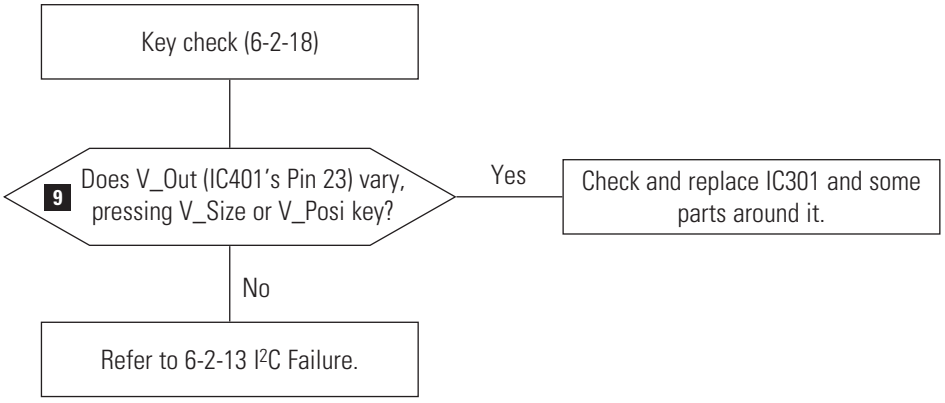

Symptoms: – One horizontal line
– Rainbow color, No Video
Are +13 V, –12 V line OK?
No
Check and replace **D608, D609, IC301,** IC302.
Yes
9 Is V_out waveform on IC401's Pin 23?
No
Is 8 V on IC401's Pin 21?
No
Check and replace R307, R308, **IC401.**
Yes
Yes
Check and replace **IC401.**
10 Is V_deflection waveform on IC301's Pin 6?
No
Check and replace IC301, R305, R306, and some parts around it.
Yes
Refer to 6-2-13 I²C Failure.

WAVEFORMS

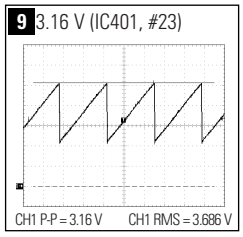




6-2-11 Invariable V_Size or V_Position


Key check (6-2-18)
9 Does V_Out (IC401's Pin 23) vary, pressing V_Size or V_Posi key?
Yes
Check and replace IC301 and some parts around it.
No
Refer to 6-2-13 I²C Failure.

WAVEFORMS



6-2-12 High Voltage Failure

Symptoms 1: – No Power
– No Raster
– Unstable operation (Fixed FBT B+ voltage with different H_frequency, Over 31 kHz: whistle sound, Narrow H_Size, Unsynchronized image, 31 kHz: OK)

Is 53 V on C623?
No → Refer to 6-2-1 No Power.
Yes

13 Is Q504's drain waveform ok?
No → Are D515, L501, Q504 ok?
No → Check and replace it.
Yes → Are D403, D408, D409, Q402 and Q411, Q412 ok?
No → Check and replace it.
Yes → Check and replace AFC input line from T501 to IC401's Pin 12. : **C408, R406.**

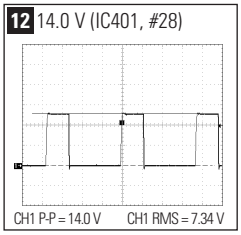
Yes

Are D502, D503, R509, R510 ok?
No → Check and replace it.
Yes

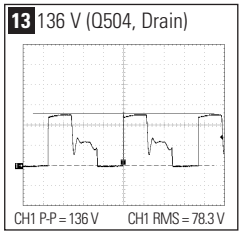
12 Does B_Out duty of IC401's Pin 28 vary with different H_frequency and image load (Full White or No Video)?
No → Check and replace Q502, Q503, **IC401, T501** and REG_IN line to IC401's Pin 15.
Yes → Check and replace Q502, Q503, IC401, T501.

WAVEFORMS

12 14.0 V (IC401, #28)



13 136 V (Q504, Drain)



Symptoms 2: – X-ray protection
– One vertical line and then high voltage shut down.

Are C417, C504, D502, D503, R509 and R510 ok?

No → Check and replace it.

Yes

Check and replace **D407, D408, D414, Q402, Q504, IC401.**

Check and replace **IC201.**

6-2-13 I²C Failure

– Almost data (Horizontal drive duty, FBT B+ duty, display image data, color data) is transferred from IC201 to IC203 and IC401 through I²C data line during power on.
– After user adjusts display image data, contrast and brightness data, these are saved to IC203.

Key check (6-2-18)

Is 5 V on IC401's Pin 32 and IC203's Pin 8?

No → Check and replace it.

Yes

14 Is there data communication on IC401's Pins 30 and 31?

No

Yes

14 Is there data communication on IC401's Pins 30 and 31 during I²C function? (H/V Posi, V_Size, S_Pin, Trap, Cont, Bright)

No → Check I²C data and clock line.

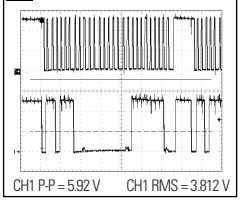
Check and replace I²C devices. **(IC201, IC203, IC401)**

Yes

Done

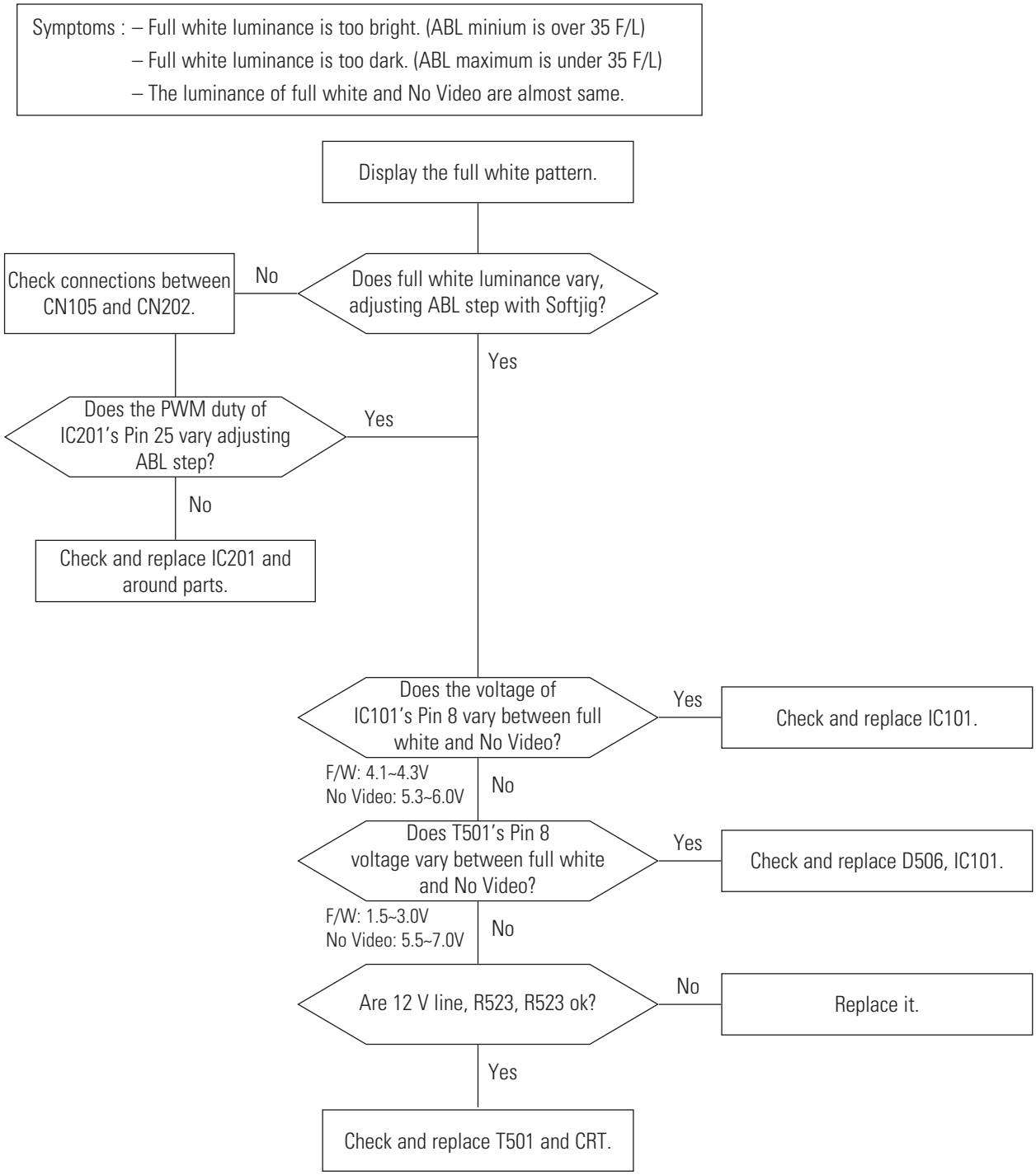
WAVEFORMS

14 5.92 V (IC203, #5, 6)

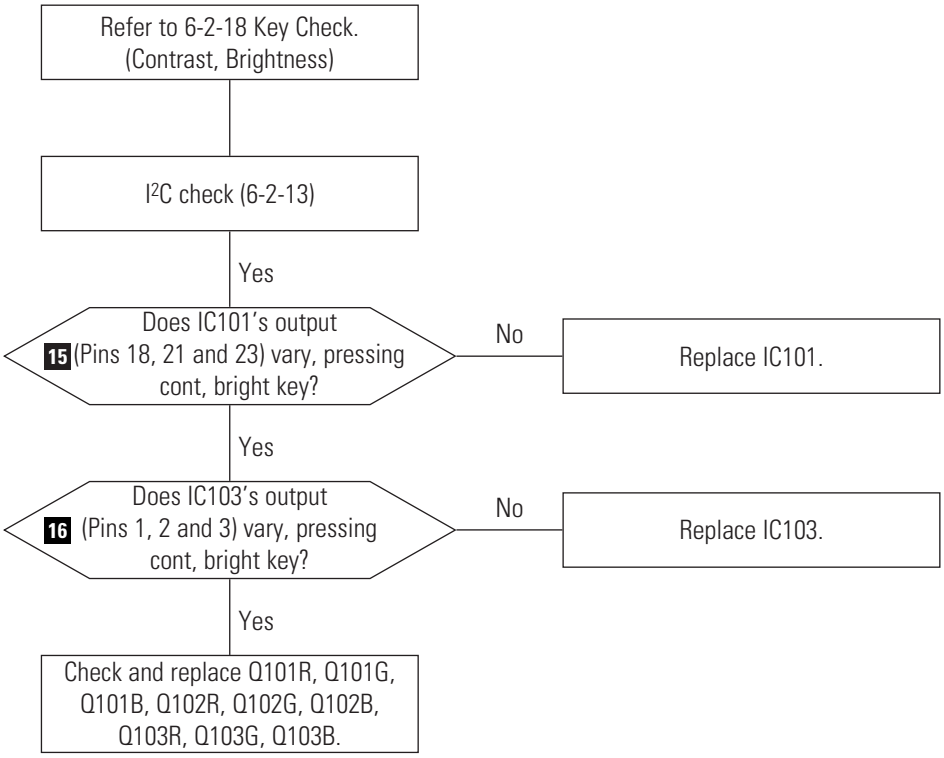


CH1 : IC401's Pin 31
CH2 : IC401's Pin 30

6-2-14 ABL Failure

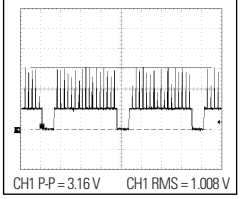

Symptoms : – Full white luminance is too bright. (ABL minium is over 35 F/L)
– Full white luminance is too dark. (ABL maximum is under 35 F/L)
– The luminance of full white and No Video are almost same.
Display the full white pattern.
Does full white luminance vary, adjusting ABL step with Softjig?
No
Check connections between CN105 and CN202.
Yes
Does the PWM duty of IC201's Pin 25 vary adjusting ABL step?
Yes
No
Check and replace IC201 and around parts.
Does the voltage of IC101's Pin 8 vary between full white and No Video?
Yes
Check and replace IC101.
F/W: 4.1~4.3V
No Video: 5.3~6.0V
No
Does T501's Pin 8 voltage vary between full white and No Video?
Yes
Check and replace D506, IC101.
F/W: 1.5~3.0V
No Video: 5.5~7.0V
No
Are 12 V line, R523, R523 ok?
No
Replace it.
Yes
Check and replace T501 and CRT.

6-2-15 Invariable Contrast, Brightness Control

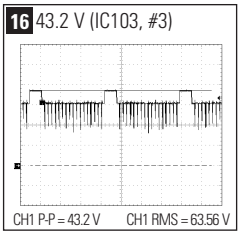


WAVEFORMS

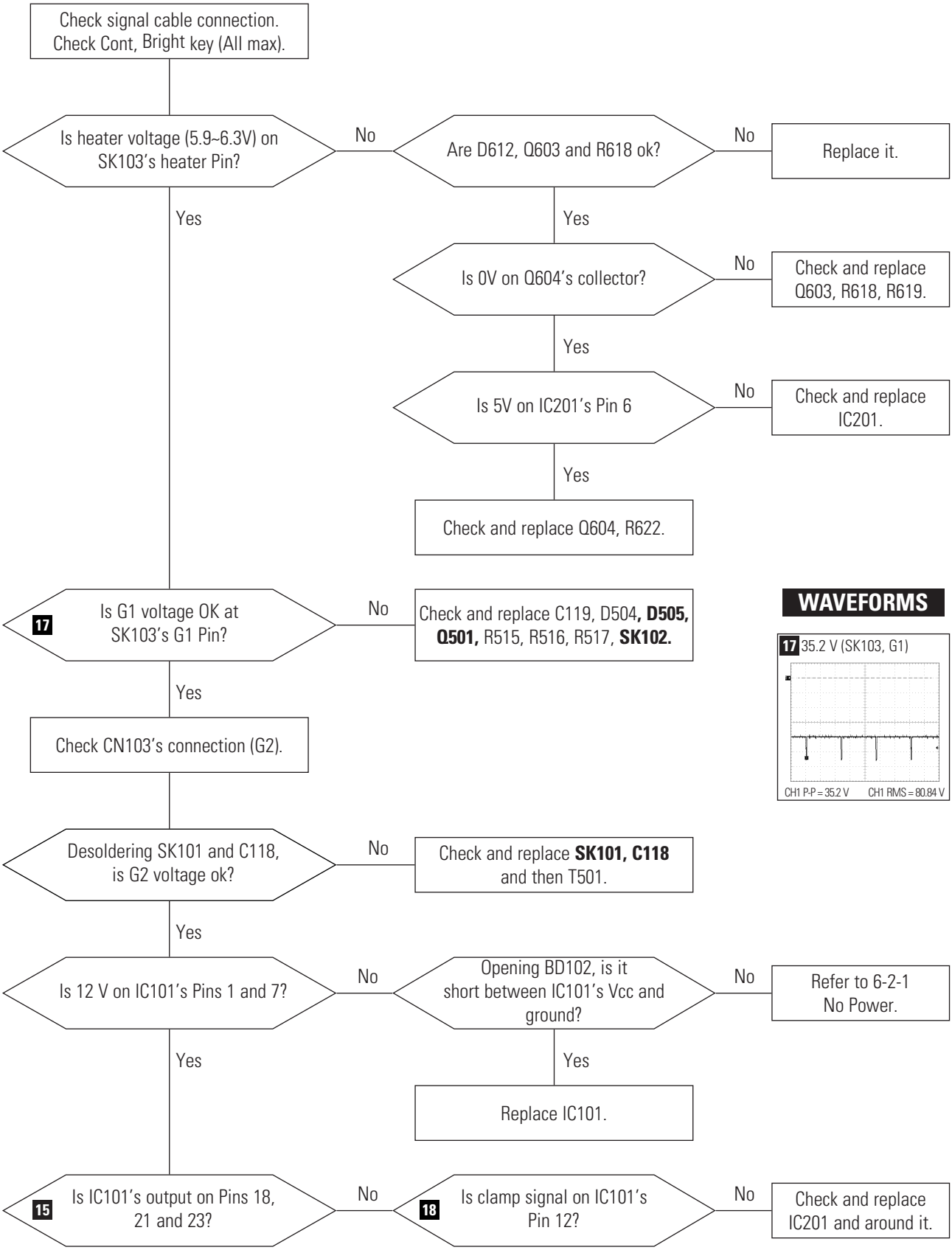
15 3.16 V (IC101, #21)



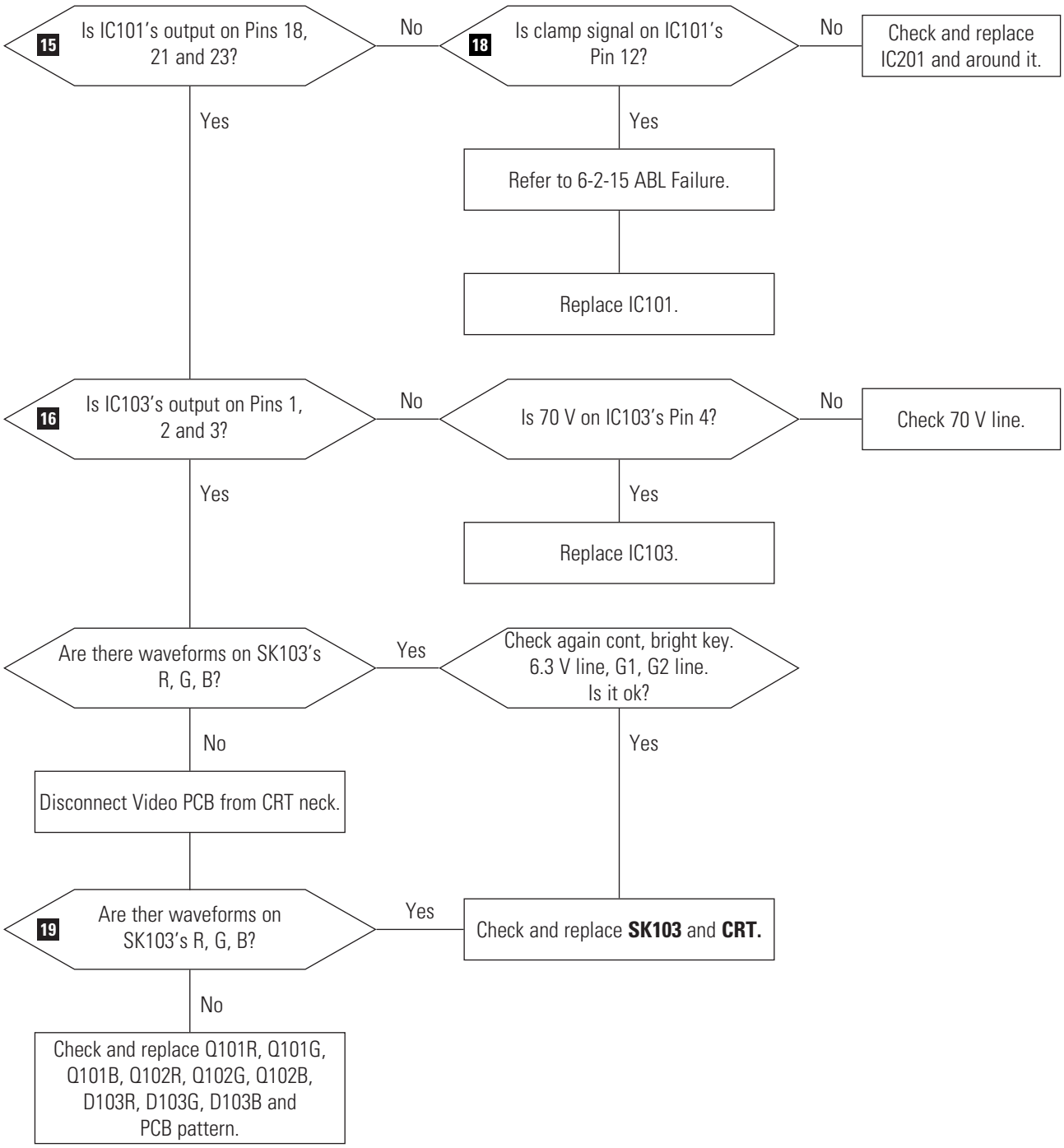
16 43.2 V (IC103, #3)



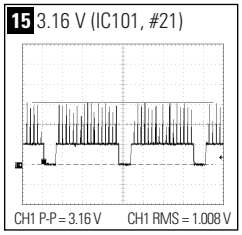
6-2-16 No Video

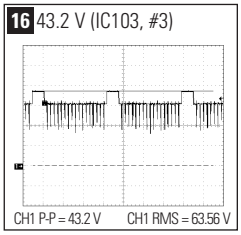


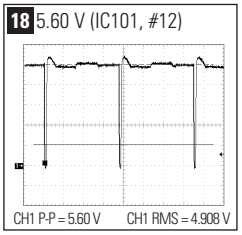
6-2-16 No Video Continued

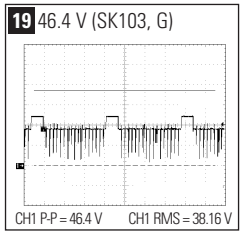

15 Is IC101's output on Pins 18, 21 and 23?
No
18 Is clamp signal on IC101's Pin 12?
No
Check and replace IC201 and around it.
Yes
Yes
Refer to 6-2-15 ABL Failure.
Replace IC101.
16 Is IC103's output on Pins 1, 2 and 3?
No
Is 70 V on IC103's Pin 4?
No
Check 70 V line.
Yes
Yes
Replace IC103.
Are there waveforms on SK103's R, G, B?
Yes
Check again cont, bright key. 6.3 V line, G1, G2 line. Is it ok?
No
Yes
Disconnect Video PCB from CRT neck.
19 Are ther waveforms on SK103's R, G, B?
Yes
Check and replace SK103 and CRT.
No
Check and replace Q101R, Q101G, Q101B, Q102R, Q102G, Q102B, D103R, D103G, D103B and PCB pattern.

WAVEFORMS









6-2-17 Micom Failure

Check the connection of signal cable.

If signal cable is disconnected, self raster (No Video, Bright Raster) appears.

Check H/V sync from PC or signal generator.

If there is no H/V sync, monitor is operated as DPMS mode.

Check if timing is out of spec or not.

If out of sepc, monitor is operated as stand-by mode. (No Video, LED: 0.5 sec toggle)
14": Horizontal 30 ~ 55 kHz, Vertical 50 ~ 120 Hz
15": Horizontal 30 ~ 61 kHz, Vertical 50 ~ 120 Hz

Key check (all key) : Refer to 6-2-19.

Is 5V on IC201's Pins 11 and 34?

No

Is 13 V on C624?

No

Refer to 6-2-1
No Power.

Yes

Yes

Check and replace IC602.

20 Are oscillation (8 MHz) on IC202's Pins 13 and 14?

No

Check and replace C203, C204, X201.

Yes

Check reset part.
Are IC202 ok?

No

Replace it.

Yes

24 25 Are H/V sync input on IC201's Pins 30 and 31?

Yes

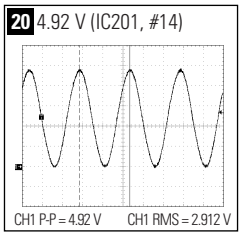
When disconnecting signal cable: Is 0V on IC201's Pin 19?
When connecting signal cable:
Is 5V on IC202's Pin 13?

No

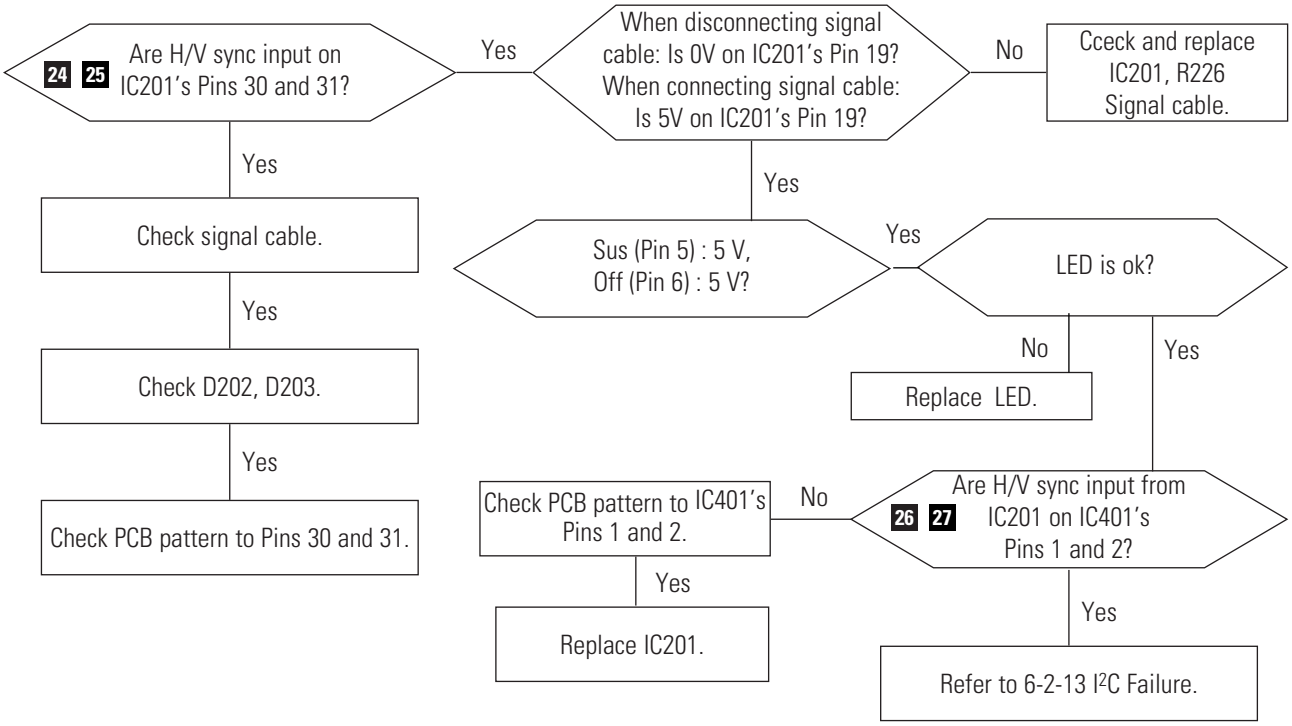
Cceck and replace
IC201, R226.

WAVEFORMS

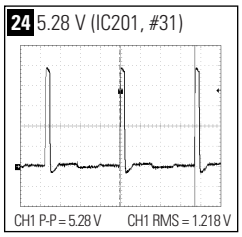
20 4.92 V (IC201, #14)

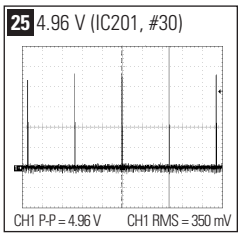


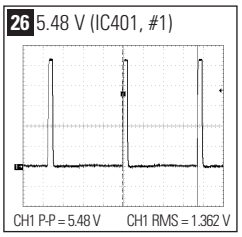
6-2-17 Micom Failure Continued

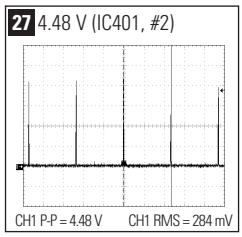

24 25 Are H/V sync input on IC201's Pins 30 and 31?
Yes
When disconnecting signal cable: Is 0V on IC201's Pin 19? When connecting signal cable: Is 5V on IC201's Pin 19?
No
Cceck and replace IC201, R226 Signal cable.
Yes
Check signal cable.
Yes
Check D202, D203.
Yes
Check PCB pattern to Pins 30 and 31.
Yes
Sus (Pin 5) : 5 V, Off (Pin 6) : 5 V?
Yes
LED is ok?
No
Replace LED.
Yes
Check PCB pattern to IC401's Pins 1 and 2.
No
26 27 Are H/V sync input from IC201 on IC401's Pins 1 and 2?
Yes
Replace IC201.
Yes
Refer to 6-2-13 I2C Failure.

WAVEFORMS



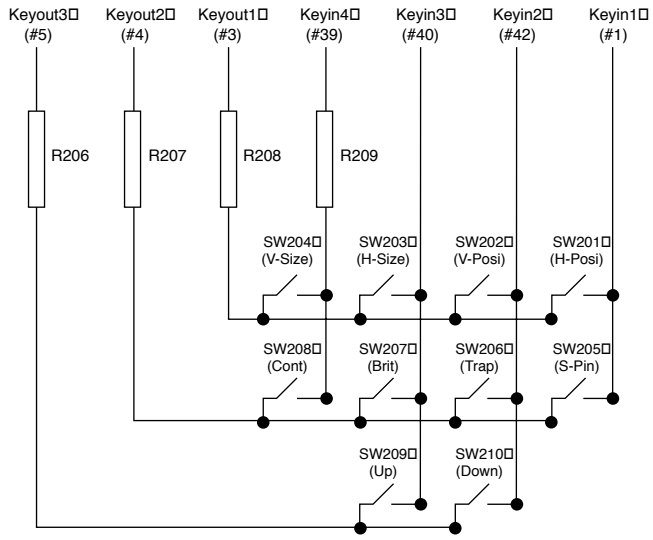






6-2-18 Key Check

1) Key Map



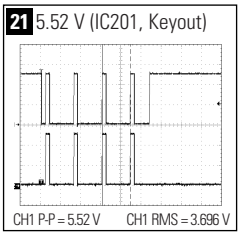
2) Voltage Check of Keyin and Keyout
   – Press the key what you want to check.
   – At that moment, the voltage of keyin and keyout that is connected with together should be changed as follows.

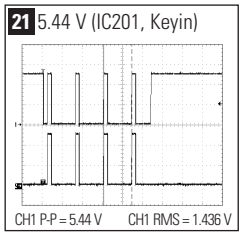
	Normal	Pressed	RMS voltage
Keyout	5 V	CH1 of Picture Pin 21	0.7 ~ 0.9 V
Keyin	0 V	CH2 of Picture Pin 21	0.7 ~ 0.9 V

3) LED Check
   – Pressing key, LED should be blinked.

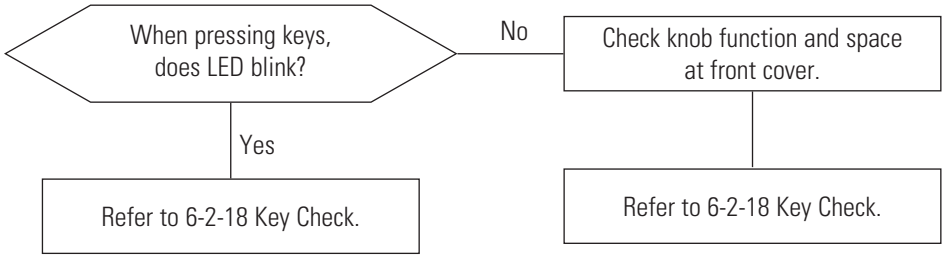
4) How to Repair?
   – If only one key has a key problem, replace that key.
   – But if some keys that are connected with same keyin or keyout line have problems, check and replace PCB pattern and IC201.

WAVEFORMS

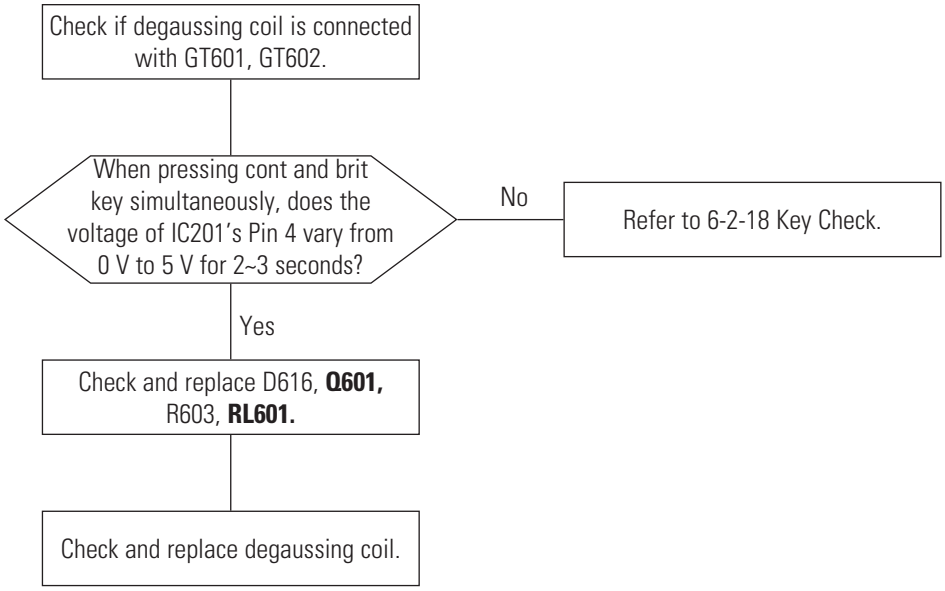




6-2-19 User Control Failure

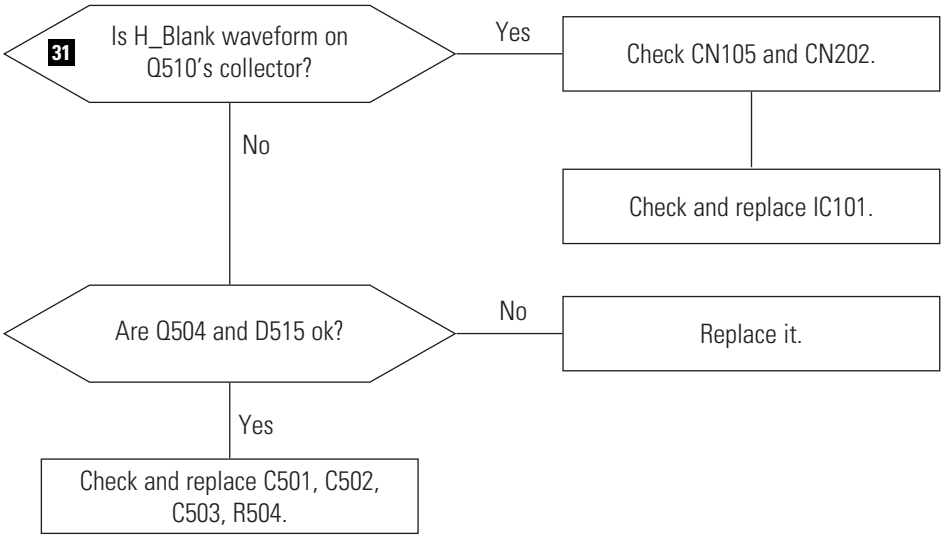

When pressing keys, does LED blink?
No
Check knob function and space at front cover.
Yes
Refer to 6-2-18 Key Check.
Refer to 6-2-18 Key Check.

6-2-20 Degaussing Failure

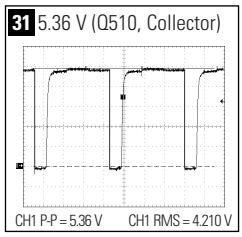

Check if degaussing coil is connected with GT601, GT602.
When pressing cont and brit key simultaneously, does the voltage of IC201's Pin 4 vary from 0 V to 5 V for 2~3 seconds?
No
Refer to 6-2-18 Key Check.
Yes
Check and replace D616, **Q601,** R603, **RL601.**
Check and replace degaussing coil.

6-2-21 Horizontal Blank Failure

Symptoms: – Dark image and if shifting image to left or right side, image is rolled.
– Raster left or right side is rolled.



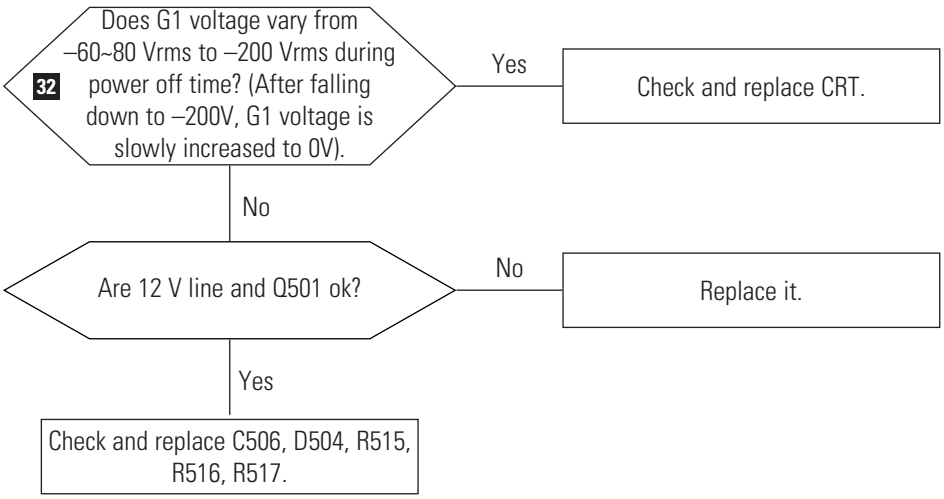
WAVEFORMS



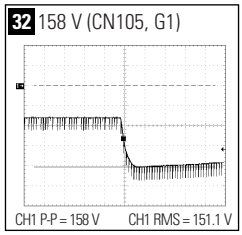
6-2-22 Whistle Sound

Check trans coil **(L401,** T501, T601, CRT)

6-2-23 Spot at Center During Power Off


Does G1 voltage vary from –60~80 Vrms to –200 Vrms during power off time? (After falling down to –200V, G1 voltage is slowly increased to 0V).
32
Yes
Check and replace CRT.
No
Are 12 V line and Q501 ok?
No
Replace it.
Yes
Check and replace C506, D504, R515, R516, R517.

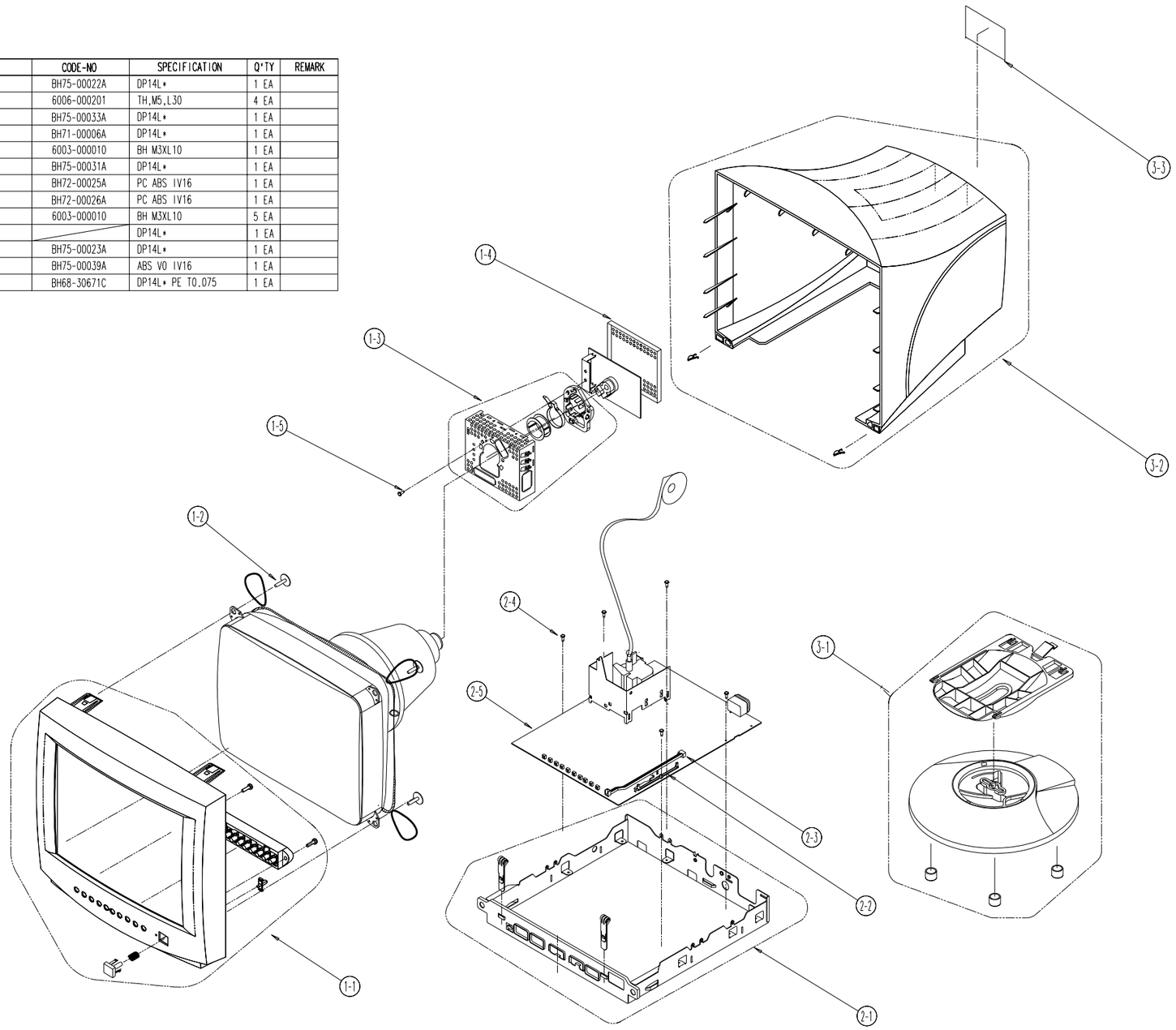
WAVEFORMS



7 Exploded View and Parts List

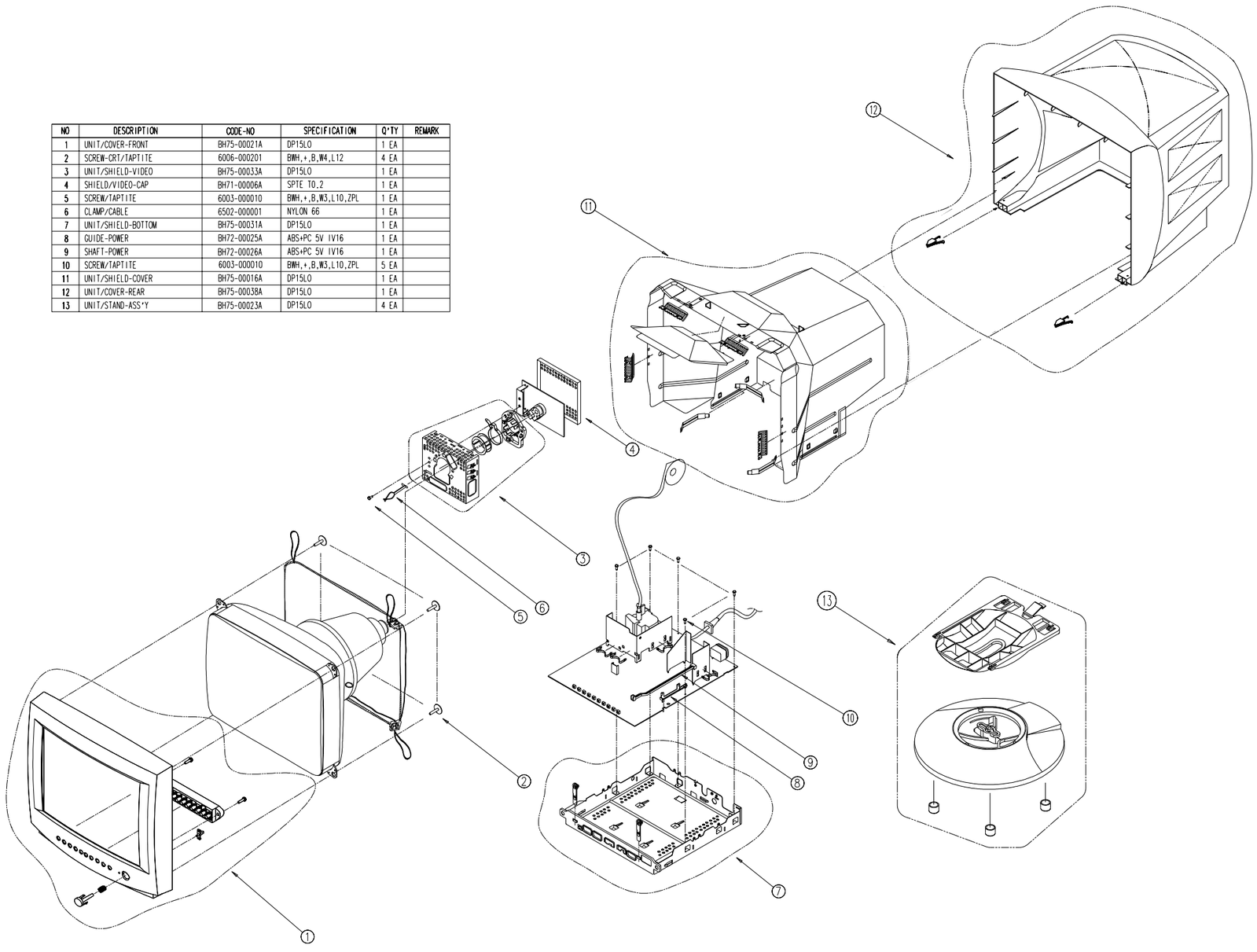
7-1 DP14L*

NO	DESCRIPTION	CODE-NO	SPECIFICATION	Q'TY	REMARK
1-1	UNIT/COVER-FRONT	BH75-00022A	DP14L*	1 EA	
1-2	SCREW-CRT/TAPTITE	6006-000201	TH,M5,L30	4 EA	
1-3	UNIT/SHIELD-VIDEO	BH75-00033A	DP14L*	1 EA	
1-4	SHIELD/VIDEO-CAP	BH71-00006A	DP14L*	1 EA	
1-5	SCREW	6003-000010	BH M3XL10	1 EA	
2-1	UNIT/SHIELD-BOTTOM	BH75-00031A	DP14L*	1 EA	
2-2	GUIDE-POWER	BH72-00025A	PC ABS IV16	1 EA	
2-3	SHAFT-POWER	BH72-00026A	PC ABS IV16	1 EA	
2-4	SCREW	6003-000010	BH M3XL10	5 EA	
2-5	PCB		DP14L*	1 EA	
3-1	UNIT/STAND	BH75-00023A	DP14L*	1 EA	
3-2	UNIT/COVER-REAR	BH75-00039A	ABS V0 IV16	1 EA	
3-3	LABEL RATING	BH68-30671C	DP14L* PE T0.075	1 EA	



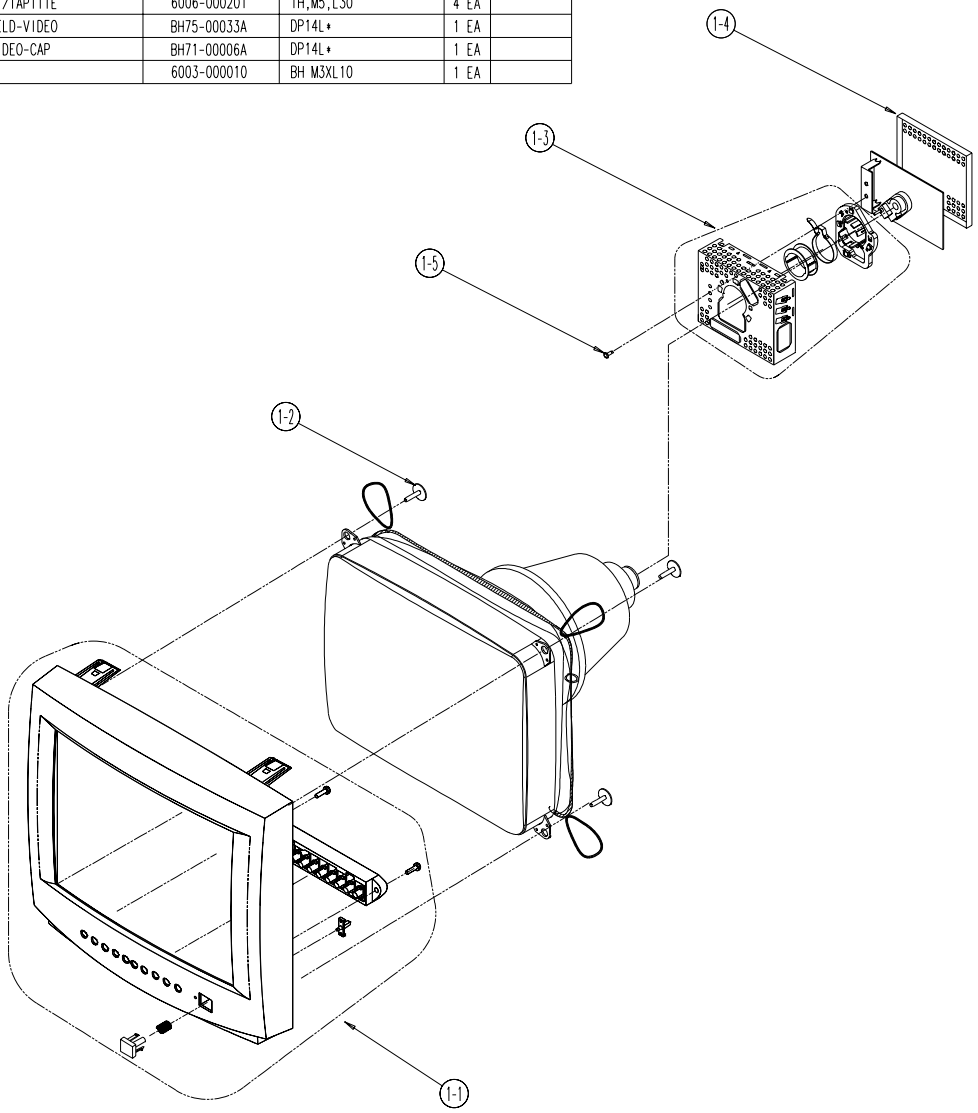
7-2 DP15L*

NO	DESCRIPTION	CODE-NO	SPECIFICATION	Q'TY	REMARK
1	UNIT/COVER-FRONT	BH75-00021A	DP15LO	1 EA	
2	SCREW-CRT/TAPTITE	6006-000201	BWH,+,B,W4,L12	4 EA	
3	UNIT/SHIELD-VIDEO	BH75-00033A	DP15LO	1 EA	
4	SHIELD/VIDEO-CAP	BH71-00006A	SPTE T0.2	1 EA	
5	SCREW/TAPTITE	6003-000010	BWH,+,B,W3,L10,ZPL	1 EA	
6	CLAMP/CABLE	6502-000001	NYLON 66	1 EA	
7	UNIT/SHIELD-BOTTOM	BH75-00031A	DP15LO	1 EA	
8	GUIDE-POWER	BH72-00025A	ABS+PC 5V IV16	1 EA	
9	SHAFT-POWER	BH72-00026A	ABS+PC 5V IV16	1 EA	
10	SCREW/TAPTITE	6003-000010	BWH,+,B,W3,L10,ZPL	5 EA	
11	UNIT/SHIELD-COVER	BH75-00016A	DP15LO	1 EA	
12	UNIT/COVER-REAR	BH75-00038A	DP15LO	1 EA	
13	UNIT/STAND-ASS'Y	BH75-00023A	DP15LO	4 EA	



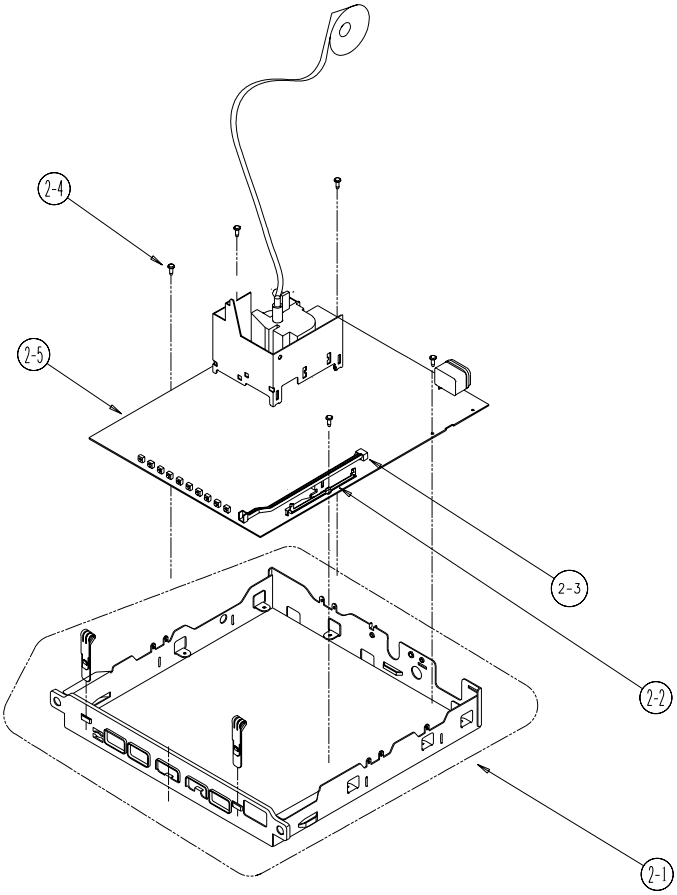
7-1-1 Front Cover & CRT Ass'y (DP14L*)

NO	DESCRIPTION	CODE-NO	SPECIFICATION	Q'TY	REMARK
1-1	UNIT/COVER-FRONT	BH75-00022A	DP14L*	1 EA	
1-2	SCREW-CRT/TAPTITE	6006-000201	TH,M5,L30	4 EA	
1-3	UNIT/SHIELD-VIDEO	BH75-00033A	DP14L*	1 EA	
1-4	SHIELD/VIDEO-CAP	BH71-00006A	DP14L*	1 EA	
1-5	SCREW	6003-000010	BH M3XL10	1 EA	



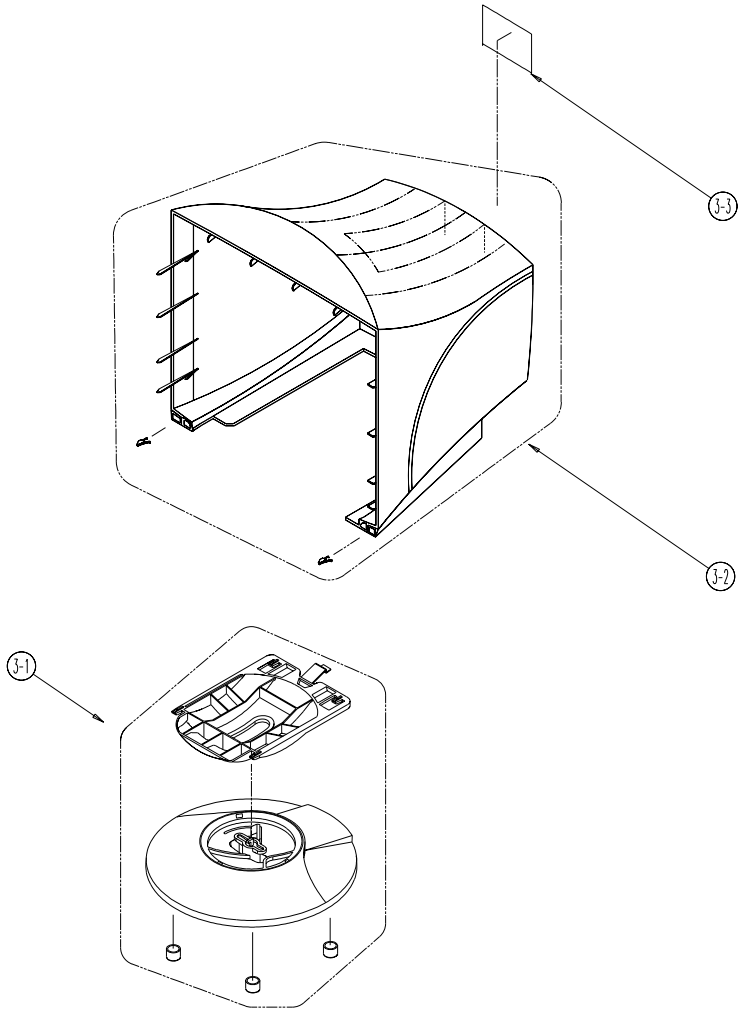
7-1-2 Chassis & Stand Ass'y (DP14L*)

NO	DESCRIPTION	CODE-NO	SPECIFICATION	Q'TY	REMARK
2-1	UNIT/SHIELD-BOTTOM	BH75-00031A	DP14L*	1 EA	
2-2	GUIDE-POWER	BH72-00025A	PC ABS IV16	1 EA	
2-3	SHAFT-POWER	BH72-00026A	PC ABS IV16	1 EA	
2-4	SCREW	6003-000010	BH M3XL10	5 EA	
2-5	PCB		DP14L*	1 EA	



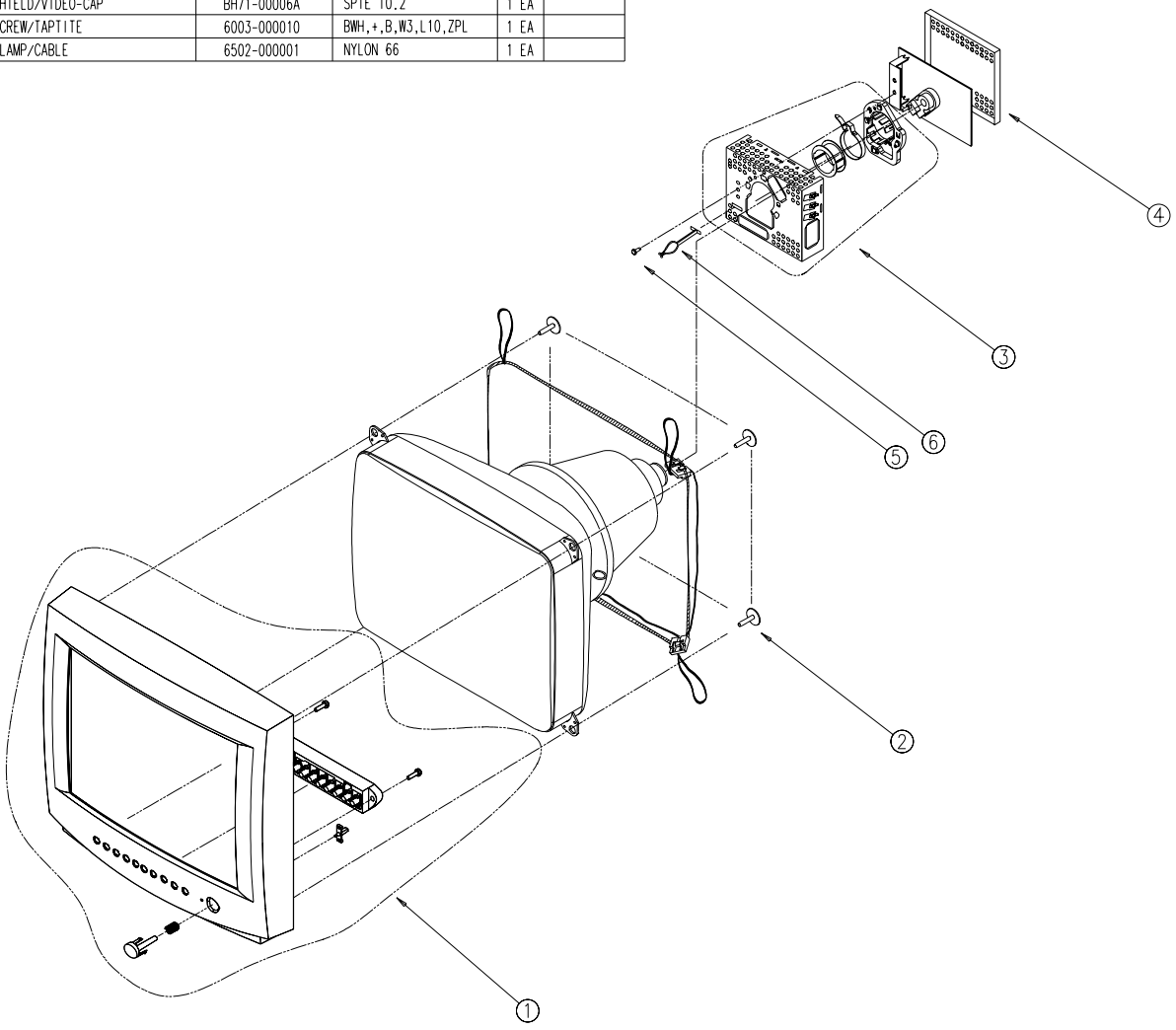
7-1-3 Rear Cover Ass'y (DP14L*)

NO	DESCRIPTION	CODE-NO	SPECIFICATION	Q'TY	REMARK
3-1	UNIT/STAND	BH75-00023A	DP14L*	1 EA	
3-2	UNIT/COVER-REAR	BH75-00039A	ABS V0 1V16	1 EA	
3-3	LABEL RATING	BH68-30671C	DP14L* PE T0.075	1 EA	



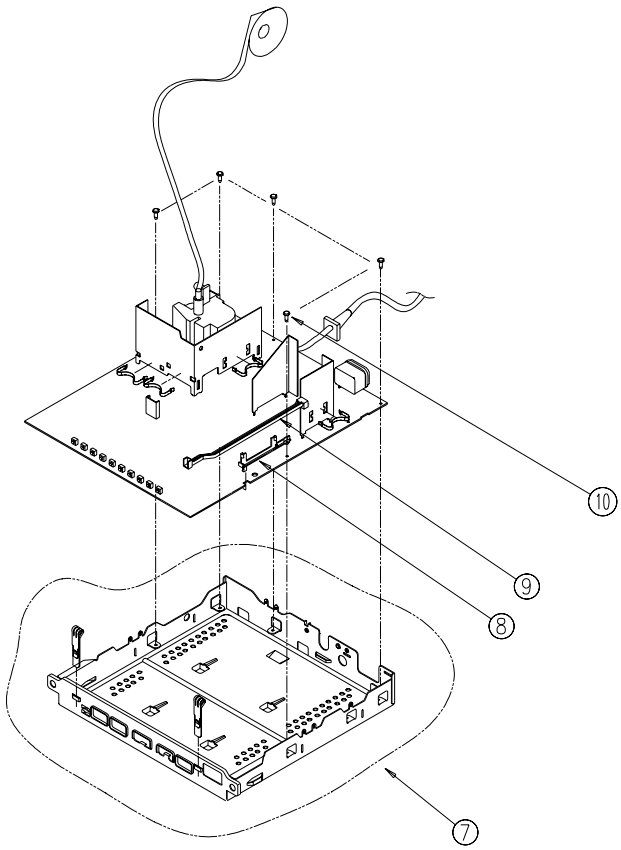
7-2-1 Front Cover & CRT Ass'y (DP15L*)

NO	DESCRIPTION	CODE-NO	SPECIFICATION	Q'TY	REMARK
1	UNIT/COVER-FRONT	BH75-00021A	DP15LO	1 EA	
2	SCREW-CRT/TAPTITE	6006-000201	BWH,+,B,W4,L12	4 EA	
3	UNIT/SHIELD-VIDEO	BH75-00033A	DP15LO	1 EA	
4	SHIELD/VIDEO-CAP	BH71-00006A	SPTE T0.2	1 EA	
5	SCREW/TAPTITE	6003-000010	BWH,+,B,W3,L10,ZPL	1 EA	
6	CLAMP/CABLE	6502-000001	NYLON 66	1 EA	



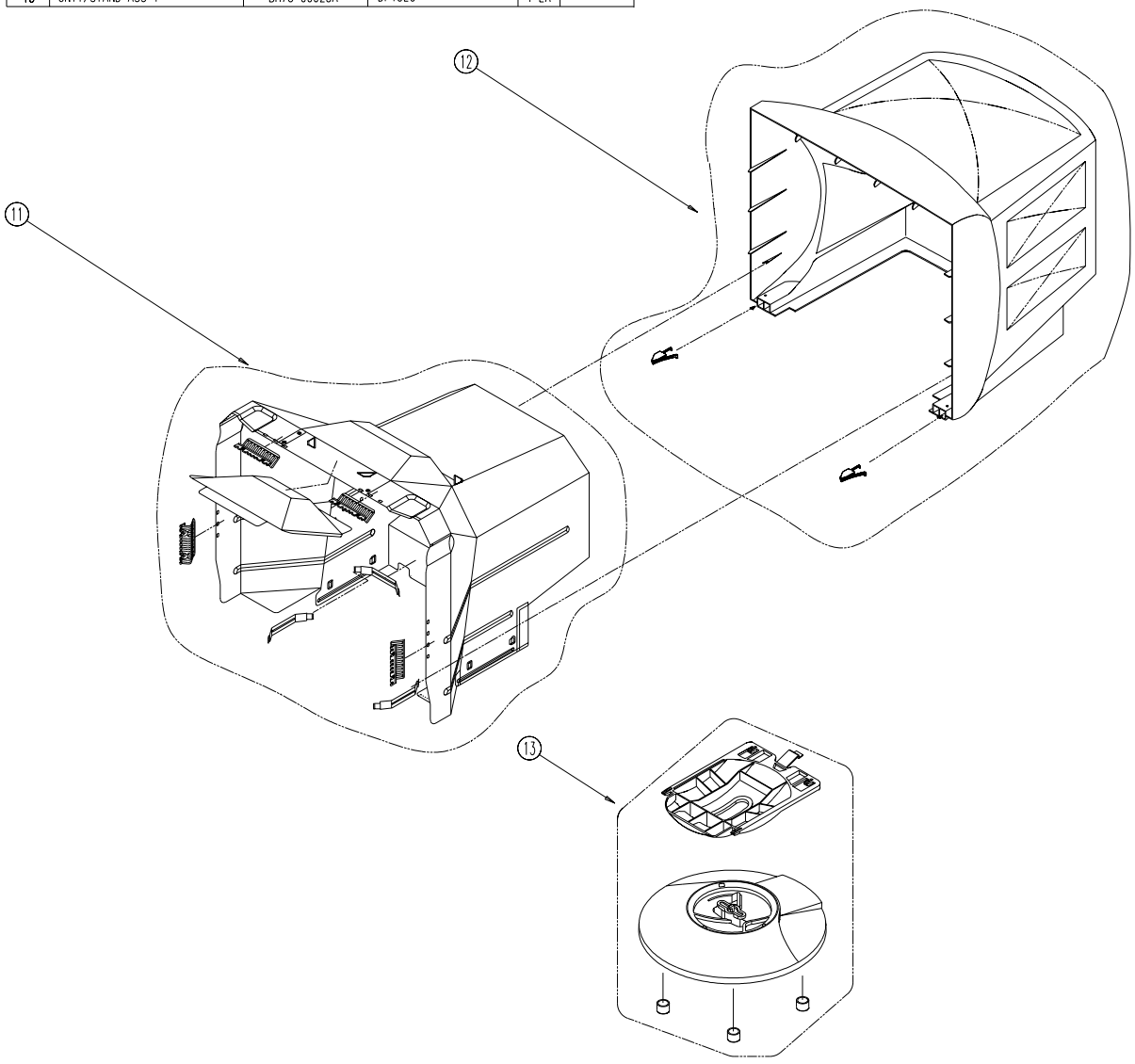
7-2-2 Chassis & Stand Ass'y (DP15L*)

NO	DESCRIPTION	CODE-NO	SPECIFICATION	Q'TY	REMARK
7	UNIT/SHIELD-BOTTOM	BH75-00031A	DP15LO	1 EA	
8	GUIDE-POWER	BH72-00025A	ABS+PC 5V IV16	1 EA	
9	SHAFT-POWER	BH72-00026A	ABS+PC 5V IV16	1 EA	
10	SCREW/TAPTITE	6003-000010	BWH,+,B,W3,L10,ZPL	5 EA	



7-2-3 Rear Cover Ass'y (DP15L*)

NO	DESCRIPTION	CODE-NO	SPECIFICATION	Q'TY	REMARK
11	UNIT/SHIELD-COVER	BH75-00016A	DP15LO	1 EA	
12	UNIT/COVER-REAR	BH75-00038A	DP15LO	1 EA	
13	UNIT/STAND-ASS'Y	BH75-00023A	DP15LO	4 EA	



8 Electrical Parts List

8-1 Main PCB Parts

Loc. No.	Code No.	Description	Specification	Remarks
BD402	3301-000011	CORE-FERRITE BEAD	AA,3.5x1.0x5.7mm,1500	
BD403	3301-000012	CORE-FERRITE BEAD	AA,3.5x1x9mm,1000,3000	
BD406	3301-000011	CORE-FERRITE BEAD	AA,3.5x1.0x5.7mm,1500	
BD501	3301-000012	CORE-FERRITE BEAD	AA,3.5x1x9mm,1000,3000	
BD502	3301-000012	CORE-FERRITE BEAD	AA,3.5x1x9mm,1000,3000	
BD601	3301-000012	CORE-FERRITE BEAD	AA,3.5x1x9mm,1000,3000	
BD602	3301-000012	CORE-FERRITE BEAD	AA,3.5x1x9mm,1000,3000	
BD603	3301-000011	CORE-FERRITE BEAD	AA,3.5x1.0x5.7mm,1500	
BD604	3301-000011	CORE-FERRITE BEAD	AA,3.5x1.0x5.7mm,1500	
C201	2401-000050	C-AL	10uF,20%,16V,GP,TP,5x11,2.5	
C203	2201-000483	C-CERAMIC,DISC	33pF,5%,50V,CH,TP,5x3,5	
C204	2201-000483	C-CERAMIC,DISC	33pF,5%,50V,CH,TP,5x3,5	
C208	2201-000146	C-CERAMIC,DISC	100pF,5%,50V,SL,TP,5x3,5	
C209	2201-000017	C-CERAMIC,DISC	1nF,10%,50V,Y5P,TP,4x3.5	
C210	2401-000050	C-AL	10uF,20%,16V,GP,TP,5x11,2.5	
C211	2401-000050	C-AL	10uF,20%,16V,GP,TP,5x11,2.5	
C212	2401-000050	C-AL	10uF,20%,16V,GP,TP,5x11,2.5	
C213	2201-000144	C-CERAMIC,DISC	100pF,5%,50V,CH,TP,8x3,5	
C214	2202-002009	C-CERAMIC,MLC-AXIAL	100nF,+80-20%,50V,Y5	
C301	2401-000849	C-AL	220uF,20%,35V,GP,TP,10x12.5,5	
C302	2305-000237	C-FILM,MPEF	1uF,5%,63V,TP,7.5x15.5mm,5mm	
C303	2202-002008	C-CERAMIC,MLC-AXIAL	10nF,+80-20%,50V,Y5V	
C304	2301-000519	C-FILM,PEF	3.3nF,5%,100V,TP,5.8x3x12.5,5	
C305	2401-000603	C-AL	1uF,20%,50V,GP,TP,5x11,5	
C306	2301-001027	C-FILM,PEF	15nF,10%,250V,TP,9.5x12x4.5,5	
C309	2401-000050	C-AL	10uF,20%,16V,GP,TP,5x11,2.5	
C310	2201-000558	C-CERAMIC,DISC	470pF,10%,50V,Y5P,TP,5x3	
C401	2301-000016	C-FILM,PEF	22nF,5%,100V,TP,7.2x4.5x9.0mm	
C402	2201-000573	C-CERAMIC,DISC	47pF,5%,50V,CH,TP,6.5x3.0	
C403	2301-000016	C-FILM,PEF	22nF,5%,100V,TP,7.2x4.5x9.0mm	
C404	2202-002021	C-CERAMIC,MLC-RADIAL	1nF,5%,50V,NPO,TP,5	
C405	2401-002075	C-AL	4.7uF,20%,50V,GP,TP,5x11,5	
C406	2301-000174	C-FILM,PEF	15nF,5%,100V,TP,7.2x4.0x7.5mm	
C407	2401-000603	C-AL	1uF,20%,50V,GP,TP,5x11,5	
C408	2301-000004	C-FILM,PEF	2.2nF,5%,100V,TP,5.5X10X2.9,5	
C409	2202-002009	C-CERAMIC,MLC-AXIAL	100nF,+80-20%,50V,Y5	
C410	2401-000031	C-AL	47uF,20%,16V,GP,TP,5x11,5	
C412	2301-000016	C-FILM,PEF	22nF,5%,100V,TP,7.2x4.5x9.0mm	
C413	2201-000471	C-CERAMIC,DISC	.33NF,10%,50V,Y5P,TP,4X3M	⚠
C414	2201-000863	C-CERAMIC,DISC	680pF,10%,50V,Y5P,TP,5x3	
C415	2401-000042	C-AL	100uF,20%,16V,GP,TP,6.3x7,5	
C416	2401-000042	C-AL	100uF,20%,16V,GP,TP,6.3x7,5	
C417	2202-002009	C-CERAMIC,MLC-AXIAL	100nF,+80-20%,50V,Y5	
C418	2301-000168	C-FILM,PEF	150nF,5%,100V,TP,11.5x19mm,7	
C419	2305-000412	C-FILM,MPEF	470nF,5%,63V,TP,5mm	

Loc. No.	Code No.	Description	Specification	Remarks
C420	2401-001509	C-AL	47uF,20%,16V,GP,TP,5x7,2.5mm	
C421	2401-001515	C-AL	47uF,20%,16V,WT,TP,6.3x11,5	
C422	2401-000603	C-AL	1uF,20%,50V,GP,TP,5x11,5	
C423	2301-000004	C-FILM,PEF	2.2nF,5%,100V,TP,5.5X10X2.9,5	
C424	2401-000887	C-AL	220uF,20%,63V,GP,TP,10x20,5	
C425	2301-000005	C-FILM,PEF	33nF,5%,100V,TP,5.8x12.5x3,5	
C426	2301-001207	C-FILM,PPF	5.2nF,5%,2.5KV,BK,29x21.5x13	⚠
C427	2201-000291	C-CERAMIC,DISC	1nF,10%,500V,Y5P,TP,8.5x5	
C428	2401-000028	C-AL	10uF,20%,50V,GP,TP,5x11,5	
C429	2401-000028	C-AL	10uF,20%,50V,GP,TP,5x11,5	
C430	2401-000603	C-AL	1uF,20%,50V,GP,TP,5x11,5	
C431	2301-001125	C-FILM,MPPF	600nF,5%,250V,TP,26x20x11.5	
C432	2401-000603	C-AL	1uF,20%,50V,GP,TP,5x11,5	
C433	2306-000164	C-FILM,MPPF	220nF,5%,250V,TP,19x22x10,7	
C434	2306-000007	C-FILM,MPPF	470nF,5%,250V,BK,26x18.5x10	
C435	2201-000471	C-CERAMIC,DISC	.33NF,10%,50V,Y5P,TP,4X3M	
C437	2301-000004	C-FILM,PEF	2.2nF,5%,100V,TP,5.5X10X2.9,5	
C438	2401-001012	C-AL	3.3UF,20%,50V,BP,TP,16X25,7.5	
C439	2303-001029	C-FILM,PPF	5.2nF,5%,630V,TP,19x7x13,7.5	
C440	2201-000326	C-CERAMIC,DISC	2.2nF,10%,50V,Y5P,TP,6.5x	
C501	2201-000017	C-CERAMIC,DISC	1nF,10%,50V,Y5P,TP,4x3.5	
C502	2201-000471	C-CERAMIC,DISC	.33NF,10%,50V,Y5P,TP,4X3M	
C503	2201-000017	C-CERAMIC,DISC	1nF,10%,50V,Y5P,TP,4x3.5	
C504	2401-000059	C-AL	220nF,20%,50V,GP,5x11,5	⚠
C506	2401-002267	C-AL	2.2uF,20%,250V,GP,TP,8x11.5,5	
C507	2401-003448	C-AL	150UF,20%,100V,GP,TP,10X20MM,5	
C508	2201-000409	C-CERAMIC,DISC	270pF,10%,500V,Y5P,TP,6x4	
C509	2306-000007	C-FILM,MPPF	470nF,5%,250V,BK,26x18.5x10	
C510	2301-000168	C-FILM,PEF	150nF,5%,100V,TP,11.5x19mm,7	
C511	2401-000603	C-AL	1uF,20%,50V,GP,TP,5x11,5	
C512	2301-000174	C-FILM,PEF	15nF,5%,100V,TP,7.2x4.0x7.5mm	
C513	2401-000010	C-AL	220uF,20%,16V,GP,6.3x11mm,2	
C601	2301-001195	C-FILM,MPPF	150nF,10%,275VAC,BK,26x16.5x	⚠
C602	2301-001195	C-FILM,MPPF	150nF,10%,275VAC,BK,26x16.5xq	⚠
C603	2201-000023	C-CERAMIC,DISC	2.2nF,20%,125V,Y5U,TP,11x	⚠
C604	2201-000023	C-CERAMIC,DISC	2.2nF,20%,125V,Y5U,TP,11x	⚠
C606	2202-002009	C-CERAMIC,MLC-AXIAL	100nF,+80-20%,50V,Y5	
C607	2401-003119	C-AL	150uF,20%,400V,GP,BK,25.4x30,1	⚠
C608	2401-000966	C-AL	22uF,20%,50V,GP,TP,5x11,5	
C609	2301-000284	C-FILM,PEF	47nF,5%,100V,TP,8.5x12.5mm,5m	
C610	2201-000019	C-CERAMIC,DISC	10nF,+80-20%,500V,Y5V,TP	
C611	2201-000012	C-CERAMIC,DISC	220pF,10%,1KV,Y5P,TP,6x5	
C612	2401-001551	C-AL	47uF,20%,35V,GP,TP,6.3x11,5	
C613	2401-000603	C-AL	1uF,20%,50V,GP,TP,5x11,5	
C614	2301-000010	C-FILM,PEF	100nF,5%,100V,TP,11.5x12.5mm	
C615	2401-002299	C-AL	4.7uF,20%,50V,GP,TP,5x7,5	
C618	2201-000023	C-CERAMIC,DISC	2.2nF,20%,125V,Y5U,TP,11x	⚠

Loc. No.	Code No.	Description	Specification	Remarks
C619	2201-000023	C-CERAMIC,DISC	2.2nF,20%,125V,Y5U,TP,11x	⚠
C620	2401-000039	C-AL	1000uF,20%,16V,GP,TP,10x16,5	
C621	2201-000469	C-CERAMIC,DISC	330pF,10%,500V,Y5P,TP,6x4	
C622	2401-001551	C-AL	47uF,20%,35V,GP,TP,6.3x11,5	
C623	2401-000058	C-AL	220UF,20%,100V,GP,TP,10X20MM,5	
C624	2401-000039	C-AL	1000uF,20%,16V,GP,TP,10x16,5	
C626	2401-000039	C-AL	1000uF,20%,16V,GP,TP,10x16,5	
C628	2401-000042	C-AL	100uF,20%,16V,GP,TP,6.3x7,5	
C629	2401-000031	C-AL	47uF,20%,16V,GP,TP,5x11,5	
C630	2401-000039	C-AL	1000uF,20%,16V,GP,TP,10x16,5	
C631	2201-000291	C-CERAMIC,DISC	1nF,10%,500V,Y5P,TP,8.5x5	
CN201	3711-003873	CONNECTOR-HEADER	BOX,7P,1R,2mm,STRAIGHT	
CN202	3711-003845	CONNECTOR-HEADER	BOX,11P,1R,2mm,STRAIGHT	
CN303	3711-000197	CONNECTOR-HEADER	1WALL,3P,1R,2.5mm,STRAI	
CN502	BH71-40300A	PIN-HINGE	BRASS,D2.36,SN,HEAT/SINK	
CN503	BH71-40300A	PIN-HINGE	BRASS,D2.36,SN,HEAT/SINK	
CN601	3721-001028	PLUG-AC POWER	3P,NI	⚠
D201	0403-000005	DIODE-ZENER	UZ5.1B,4.8-5.4V,500mW,DO-35	
D202	0403-000005	DIODE-ZENER	UZ5.1B,4.8-5.4V,500mW,DO-35	
D203	0403-000005	DIODE-ZENER	UZ5.1B,4.8-5.4V,500mW,DO-35	
D204	0403-000005	DIODE-ZENER	UZ5.1B,4.8-5.4V,500mW,DO-35	
D205	0403-000005	DIODE-ZENER	UZ5.1B,4.8-5.4V,500mW,DO-35	
D301	0402-000274	DIODE-RECTIFIER	UF4004,400V,1A,DO-41,TP	
D401	0401-000005	DIODE-SWITCHING	1N4148,75V,200MA,DO-35,T	
D404	0402-000128	DIODE-RECTIFIER	1N4002GP,100V,1A,DO-41,T	
D405	0401-000005	DIODE-SWITCHING	1N4148,75V,200MA,DO-35,T	
D406	0402-001252	DIODE-RECTIFIER	DG3L,1500V,3A,DG3,BK	
D407	0402-001257	DIODE-RECTIFIER	DTV32F,1500V,15A,TO-220A	
D408	0402-001118	DIODE-RECTIFIER	UF1G,400V,1.2A,DO-204AL	
D409	0402-000007	DIODE-RECTIFIER	1N4937GP,600V,1A,DO-41,T	
D410	0401-000005	DIODE-SWITCHING	1N4148,75V,200MA,DO-35,T	
D411	0401-000005	DIODE-SWITCHING	1N4148,75V,200MA,DO-35,T	
D412	0402-000006	DIODE-RECTIFIER	1N4007GP,1000V,1A,DO-41	
D413	0402-000006	DIODE-RECTIFIER	1N4007GP,1000V,1A,DO-41	
D414	0402-001112	DIODE-RECTIFIER	MDV04-600,600V,4A,DO-201	
D501	0401-000005	DIODE-SWITCHING	1N4148,75V,200MA,DO-35,T	
D502	0403-001247	DIODE-ZENER	UZ24BH,24V,24.2-25.7V,500mW	
D503	0401-000005	DIODE-SWITCHING	1N4148,75V,200MA,DO-35,T	
D504	0402-000546	DIODE-RECTIFIER	TVR10G,400V,1.0A,DO-41,T	
D505	0401-000006	DIODE-SWITCHING	BAV21,250V,250mA,DO-35,T	
D506	0401-000005	DIODE-SWITCHING	1N4148,75V,200MA,DO-35,T	
D507	0401-000005	DIODE-SWITCHING	1N4148,75V,200MA,DO-35,T	
D508	0403-000007	DIODE-ZENER	UZ6.2BM,6.2V,6.0-6.4V,500mW	
D515	0402-001118	DIODE-RECTIFIER	UF1G,400V,1.2A,DO-204AL	
D5V	0403-000005	DIODE-ZENER	UZ5.1B,4.8-5.4V,500mW,DO-35	
D601	0402-000103	DIODE-BRIDGE	D2SBA60,600V,1.5A,SIP-4,ST	⚠

Loc. No.	Code No.	Description	Specification	Remarks
D602	0402-000012	DIODE-RECTIFIER	UF4007,1KV,1A,DO-41,TP	
D603	0402-000546	DIODE-RECTIFIER	TVR10G,400V,1.0A,DO-41,T	
D604	0402-000012	DIODE-RECTIFIER	UF4007,1KV,1A,DO-41,TP	
D605	0402-000546	DIODE-RECTIFIER	TVR10G,400V,1.0A,DO-41,T	
D606	0401-000005	DIODE-SWITCHING	1N4148,75V,200MA,DO-35,T	
D607	0403-000361	DIODE-ZENER	UZ6.2BSB,6.2V,5.99-6.24V,500	
D608	0402-000546	DIODE-RECTIFIER	TVR10G,400V,1.0A,DO-41,T	
D609	0402-001118	DIODE-RECTIFIER	UF1G,400V,1.2A,DO-204AL	
D610	0402-000012	DIODE-RECTIFIER	UF4007,1KV,1A,DO-41,TP	
D611	0402-000005	DIODE-RECTIFIER	31DF4,400V,3A,DO-201AD,B	
D612	0402-000546	DIODE-RECTIFIER	TVR10G,400V,1.0A,DO-41,T	
D613	0401-000005	DIODE-SWITCHING	1N4148,75V,200MA,DO-35,T	
D614	0403-000007	DIODE-ZENER	UZ6.2BM,6.2V,6.0-6.4V,500mW	
D615	0403-000007	DIODE-ZENER	UZ6.2BM,6.2V,6.0-6.4V,500mW	
D616	0401-000005	DIODE-SWITCHING	1N4148,75V,200MA,DO-35,T	
D617	0401-000005	DIODE-SWITCHING	1N4148,75V,200MA,DO-35,T	
FH601	3602-000001	FUSE-CLIP	30mohm	⚠
FUSE	3601-000004	FUSE-FERRULE	250V,3.15A,SB,CERAMIC,5x20m	
GT301	BH71-40300A	PIN-HINGE	BRASS,D2.36,SN,HEAT/SINK	
GT302	BH71-40300A	PIN-HINGE	BRASS,D2.36,SN,HEAT/SINK	
GT601	BH71-40300A	PIN-HINGE	BRASS,D2.36,SN,HEAT/SINK	
GT602	BH71-40300A	PIN-HINGE	BRASS,D2.36,SN,HEAT/SINK	
GT603	BH71-40300A	PIN-HINGE	BRASS,D2.36,SN,HEAT/SINK	
GT604	BH71-40300A	PIN-HINGE	BRASS,D2.36,SN,HEAT/SINK	
HS501	BH99-00001A	ASSY,HEAT/SINK	H/S FBT,SPRING,KA5802,DTV	
IC201	BH09-00005A	IC-MICROCONTROLLER	DM024,DA,01	
IC201_SOCK	3704-001071	SOCKET-IC	42P,DIP,SN,1.778mm	
IC202	1203-000495	IC-RESET	7045,T0-92,3P,PLASTIC,4.3/4	
IC203	1103-001149	IC-EEPROM	24C041,4KBIT,DIP,8P,300MIL,10M	
IC301	1204-001508	IC-VERTICAL DEF.	KA2142,SIP,10P,PLASTI	
IC401	1204-001512	IC-DEF. PROCESSOR	STV7779,SDIP,32P,300MI	⚠
IC601	BH13-00004A	IC-HYBRID	DP104C,TO-220-5L,5P,POWER SW	⚠
IC602	1203-000001	IC-POSI.FIXED REG.	7805,TO-220,3P,PLAS	
L401	BH27-20345D	COIL-HOR LINEARITY	5.2uH+/-1.5uH,DR141	
L402	BH27-00008A	COIL-LINE FILTER	200UH,10%,AR 0630,BULK	
L403	2701-000154	INDUCTOR-AXIAL	220uH,10%,4.2x9.8mm	
L404	BH27-20342U	COIL-CHOKE	8.2MH(AT250KHz),10%,DR8*11,BU	
L501	BH27-00008A	COIL-LINE FILTER	200UH,10%,AR 0630,BULK	
L601	BH27-00007A	COIL-LINE FILTER	25MH MIN,SQE 2424,BUL	⚠
OP201	0601-001147	LED	ROUND,GRN,4.75mm,565nm	
Q301	0501-000586	TR-SMALL SIGNAL	KSC945,NPN,250mW,TO-92,T	
Q401	0501-000369	TR-SMALL SIGNAL	KSC2331-Y,NPN,1W,TO-92L	⚠
Q402	0502-001129	TR-POWER	KSC5802,NPN,70W,TO-3PF,ST,5	
Q403	0501-000586	TR-SMALL SIGNAL	KSC945,NPN,250mW,TO-92,T	
Q404	0501-000303	TR-SMALL SIGNAL	KSA733,PNP,250mW,TO-92,T	
Q405	0501-000586	TR-SMALL SIGNAL	KSC945,NPN,250mW,TO-92,T	
Q406	0505-001309	FET-SILICON	IRF630,N,200V,10A,0.4OHM,100	

Loc. No.	Code No.	Description	Specification	Remarks
Q407	0501-000586	TR-SMALL SIGNAL	KSC945,NPN,250mW,TO-92,T	
Q408	0505-001309	FET-SILICON	IRF630,N,200V,10A,0.4OHM,100	
Q409	0501-000303	TR-SMALL SIGNAL	KSA733,PNP,250mW,TO-92,T	
Q410	0501-000303	TR-SMALL SIGNAL	KSA733,PNP,250mW,TO-92,T	
Q411	0501-000586	TR-SMALL SIGNAL	KSC945,NPN,250mW,TO-92,T	
Q412	0502-000465	TR-POWER	KTD2058-Y,NPN,25W,TO-220IS,ST	
Q501	0501-000143	TR-SMALL SIGNAL	2N6520,PNP,625mW,TO-92	
Q502	0501-000586	TR-SMALL SIGNAL	KSC945,NPN,250mW,TO-92,T	
Q503	0501-000303	TR-SMALL SIGNAL	KSA733,PNP,250mW,TO-92,T	
Q504	0505-001309	FET-SILICON	IRF630,N,200V,10A,0.4OHM,100	
Q510	0501-000122	TR-SMALL SIGNAL	2N3904,NPN,625mW,TO-92,T	
Q601	0501-000586	TR-SMALL SIGNAL	KSC945,NPN,250mW,TO-92,T	
Q602	0501-000122	TR-SMALL SIGNAL	2N3904,NPN,625mW,TO-92,T	
Q603	0501-000321	TR-SMALL SIGNAL	KSB1116-Y,PNP,0.75W,TO-9	
Q604	0501-000586	TR-SMALL SIGNAL	KSC945,NPN,250mW,TO-92,T	
Q605	0501-000321	TR-SMALL SIGNAL	KSB1116-Y,PNP,0.75W,TO-9	
Q606	0501-000586	TR-SMALL SIGNAL	KSC945,NPN,250mW,TO-92,T	
Q607	0501-000586	TR-SMALL SIGNAL	KSC945,NPN,250mW,TO-92,T	
Q608	0501-002228	TR-SMALL SIGNAL	KTA1281,PNP,1000MW,TO-92	
R201	2001-000869	R-CARBON	56OHM,5%,1/8W,AA,TP,1.8X3.2MM	
R202	2001-000554	R-CARBON	270OHM,5%,1/8W,AA,TP,1.8X3.2MM	
R203	2001-000554	R-CARBON	270OHM,5%,1/8W,AA,TP,1.8X3.2MM	
R204	2001-000869	R-CARBON	56OHM,5%,1/8W,AA,TP,1.8X3.2MM	
R205	2001-000869	R-CARBON	56OHM,5%,1/8W,AA,TP,1.8X3.2MM	
R206	2001-000515	R-CARBON	220OHM,5%,1/8W,AA,TP,1.8X3.2MM	
R207	2001-000515	R-CARBON	220OHM,5%,1/8W,AA,TP,1.8X3.2MM	
R208	2001-000515	R-CARBON	220OHM,5%,1/8W,AA,TP,1.8X3.2MM	
R209	2001-000515	R-CARBON	220OHM,5%,1/8W,AA,TP,1.8X3.2MM	
R213	2001-000786	R-CARBON	47KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R214	2001-000786	R-CARBON	47KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R221	2001-000591	R-CARBON	3.3KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R222	2001-000591	R-CARBON	3.3KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R223	2001-000869	R-CARBON	56OHM,5%,1/8W,AA,TP,1.8X3.2MM	
R224	2001-000869	R-CARBON	56OHM,5%,1/8W,AA,TP,1.8X3.2MM	
R225	2001-000435	R-CARBON	1MOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R226	2001-000290	R-CARBON	10KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R227	2001-000515	R-CARBON	220OHM,5%,1/8W,AA,TP,1.8X3.2MM	
R228	2001-000869	R-CARBON	56OHM,5%,1/8W,AA,TP,1.8X3.2MM	
R229	2001-000869	R-CARBON	56OHM,5%,1/8W,AA,TP,1.8X3.2MM	
R230	2001-000005	R-CARBON	390OHM,5%,1/8W,AA,TP,1.8X3.2MM	
R231	2001-000290	R-CARBON	10KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R232	2001-000869	R-CARBON	56OHM,5%,1/8W,AA,TP,1.8X3.2MM	
R233	2001-000869	R-CARBON	56OHM,5%,1/8W,AA,TP,1.8X3.2MM	
R234	2001-000281	R-CARBON	100OHM,5%,1/8W,AA,TP,1.8X3.2MM	
R235	2001-000429	R-CARBON	1KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R236	2001-000290	R-CARBON	10KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R237	2001-000290	R-CARBON	10KOHM,5%,1/8W,AA,TP,1.8X3.2MM	

Loc. No.	Code No.	Description	Specification	Remarks
R238	2001-000411	R-CARBON	18KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R239	2001-000290	R-CARBON	10KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R240	2001-000290	R-CARBON	10KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R241	2001-000290	R-CARBON	10KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R301	2004-000284	R-METAL	12Kohm,1%,1/4W,AA,TP,2.4x6.4mm	
R303	2001-000016	R-CARBON(S)	1OHM,5%,1/2W,AA,TP,2.4X6.4MM	
R304	2004-001023	R-METAL	5.6Kohm,1%,1/8W,AA,TP,1.8x3.2m	
R305	2001-001107	R-CARBON(S)	220ohm,5%,1/2W,AA,TP,2.4x6.4	
R306	2001-003192	R-CARBON(S)	0.82OHM,5%,1/2W,AA,TP,2.4X6	
R307	2001-000577	R-CARBON	2KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R308	2001-000331	R-CARBON	12KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R310	2001-000411	R-CARBON	18KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R311	2001-000702	R-CARBON	39KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R312	2001-000812	R-CARBON	5.6KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R313	2001-000290	R-CARBON	10KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R314	2001-000734	R-CARBON	4.7KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R401	2001-000429	R-CARBON	1KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R402	2001-000429	R-CARBON	1KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R403	2004-001137	R-METAL	6.8Kohm,1%,1/8W,AA,TP,1.8x3.2m	
R404	2001-000449	R-CARBON	2.2KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R406	2001-000006	R-CARBON	2.4KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R407	2001-000273	R-CARBON	100KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R408	2001-000435	R-CARBON	1MOHM,5%,1/8W,AA,TP,1.8X3.2MM	⚠
R409	2001-000241	R-CARBON	1.5KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R410	2001-000869	R-CARBON	56OHM,5%,1/8W,AA,TP,1.8X3.2MM	
R411	2001-000869	R-CARBON	56OHM,5%,1/8W,AA,TP,1.8X3.2MM	
R412	2001-000042	R-CARBON	1KOHM,5%,1/4W,AA,TP,2.4X6.4MM	
R413	2001-000290	R-CARBON	10KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R414	2001-000645	R-CARBON	330KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R415	2001-001072	R-CARBON(S)	12OHM,5%,1/2W,AA,TP,2.4X6.4M	
R416	2003-000009	R-METAL OXIDE(S)	220ohm,5%,1W,AA,TP,3.3x	⚠
R417	2001-000405	R-CARBON	180OHM,5%,1/8W,AA,TP,1.8X3.2MM	⚠
R418	2001-000429	R-CARBON	1KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R419	2001-000016	R-CARBON(S)	1OHM,5%,1/2W,AA,TP,2.4X6.4MM	
R421	2001-000110	R-CARBON	10OHM,5%,1/4W,AA,TP,2.4X6.4MM	
R422	2001-001053	R-CARBON(S)	1.5OHM,5%,1/2W,AA,TP,2.4X6.4	
R423	2003-000009	R-METAL OXIDE(S)	220ohm,5%,1W,AA,TP,3.3x	
R424	2001-000211	R-CARBON	1OHM,5%,1/4W,AA,TP,2.4X6.4MM	
R425	2001-000429	R-CARBON	1KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R426	2001-000281	R-CARBON	100OHM,5%,1/8W,AA,TP,1.8X3.2MM	
R427	2001-000290	R-CARBON	10KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R428	2001-000449	R-CARBON	2.2KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R429	2001-000076	R-CARBON	47KOHM,5%,1/4W,AA,TP,2.4X6.4MM	
R430	2001-000435	R-CARBON	1MOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R431	2001-000290	R-CARBON	10KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R432	2001-000290	R-CARBON	10KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R433	2001-000076	R-CARBON	47KOHM,5%,1/4W,AA,TP,2.4X6.4MM	

Loc. No.	Code No.	Description	Specification	Remarks
R434	2001-000435	R-CARBON	1MOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R435	2001-000273	R-CARBON	100KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R436	2001-000356	R-CARBON	150KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R437	2001-000009	R-CARBON	20KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R438	2001-000721	R-CARBON	4.3KOHM,5%,1/4W,AA,TP,2.4X6.4MM	
R439	2004-000327	R-METAL	150Kohm,1%,1/4W,AA,TP,2.4x6.4m	
R440	2001-000591	R-CARBON	3.3KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R441	2001-000864	R-CARBON	56KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R442	2001-000241	R-CARBON	1.5KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R501	2001-000331	R-CARBON	12KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R502	2001-000947	R-CARBON	7.5KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R503	2001-000449	R-CARBON	2.2KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R504	2001-000331	R-CARBON	12KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R505	2001-000591	R-CARBON	3.3KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R506	2001-000702	R-CARBON	39KOHM,5%,1/8W,AA,TP,1.8X3.2MM	⚠
R507	2004-004095	R-METAL	2.36Kohm,1%,1/4W,AA,TP,2.4x6.4	⚠
R508	2004-000284	R-METAL	12Kohm,1%,1/4W,AA,TP,2.4x6.4mm	⚠
R509	2001-000645	R-CARBON	330KOHM,5%,1/8W,AA,TP,1.8X3.2MM	⚠
R510	2004-000716	R-METAL	3.6Kohm,1%,1/4W,AA,TP,2.4x6.4m	⚠
R511	2001-000591	R-CARBON	3.3KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R513	2001-000084	R-CARBON	100KOHM,5%,1/4W,AA,TP,2.4X6.4MM	
R514	2001-000454	R-CARBON	2.2MOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R515	2001-000087	R-CARBON(S)	120KOHM,5%,1/2W,AA,TP,2.4X6	⚠
R516	2001-000096	R-CARBON(S)	1MOHM,5%,1/2W,AA,TP,2.4X6.4M	⚠
R517	2001-000016	R-CARBON(S)	1OHM,5%,1/2W,AA,TP,2.4X6.4MM	
R518	2001-000290	R-CARBON	10KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R519	2001-001099	R-CARBON(S)	2.7KOHM,5%,1/2W,AA,TP,2.4X6	
R520	2001-000110	R-CARBON	10OHM,5%,1/4W,AA,TP,2.4X6.4MM	
R521	2001-000016	R-CARBON(S)	1OHM,5%,1/2W,AA,TP,2.4X6.4MM	
R522	2001-001197	R-CARBON(S)	910OHM,5%,1/2W,AA,TP,2.4X6.4	
R523	2001-000522	R-CARBON	22KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R524	2001-000786	R-CARBON	47KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R525	2001-000539	R-CARBON	24KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R526	2001-000850	R-CARBON	560KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R527	2001-001000	R-CARBON	82KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R528	2001-000011	R-CARBON	75KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R529	2001-000244	R-CARBON	1.5MOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R530	2001-000429	R-CARBON	1KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R531	2001-000004	R-CARBON	200KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R532	2001-000016	R-CARBON(S)	1OHM,5%,1/2W,AA,TP,2.4X6.4MM	
R601	2001-000643	R-CARBON	330KOHM,5%,1/4W,AA,TP,2.4X6.4MM	⚠
R602	2001-000643	R-CARBON	330KOHM,5%,1/4W,AA,TP,2.4X6.4MM	
R603	2001-000924	R-CARBON	680OHM,5%,1/8W,AA,TP,1.8X3.2MM	
R604	2001-000857	R-CARBON	560OHM,5%,1/8W,AA,TP,1.8X3.2MM	
R605	2001-000281	R-CARBON	100OHM,5%,1/8W,AA,TP,1.8X3.2MM	
R606	2003-000495	R-METAL OXIDE(S)	150Kohm,5%,1W,AA,TP,3.3	
R607	2003-000495	R-METAL OXIDE(S)	150Kohm,5%,1W,AA,TP,3.3	

Loc. No.	Code No.	Description	Specification	Remarks
R608	2001-000734	R-CARBON	4.7KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R609	2003-000738	R-METAL OXIDE(S)	56Kohm,5%,2W,AA,TP,4x12	
R610	2003-000507	R-METAL OXIDE(S)	15Kohm,5%,1W,AA,TP,3.3x	
R611	2001-001163	R-CARBON(S)	560OHM,5%,1/2W,AA,TP,2.4X6.4	
R612	2001-001117	R-CARBON(S)	2KOHM,5%,1/2W,AA,TP,2.4X6.4M	
R613	2003-000471	R-METAL OXIDE(S)	10ohm,5%,2W,AA,TP,4x12m	⚠
R615	2001-000354	R-CARBON	150KOHM,5%,1/4W,AA,TP,2.4X6.4MM	
R616	2001-000105	R-CARBON	1.5KOHM,5%,1/4W,AA,TP,2.4X6.4MM	
R617	2001-000734	R-CARBON	4.7KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R618	2001-000857	R-CARBON	560OHM,5%,1/8W,AA,TP,1.8X3.2MM	
R619	2001-000786	R-CARBON	47KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R621	2001-000857	R-CARBON	560OHM,5%,1/8W,AA,TP,1.8X3.2MM	
R622	2001-000734	R-CARBON	4.7KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R623	2003-000507	R-METAL OXIDE(S)	15Kohm,5%,1W,AA,TP,3.3x	
R624	2001-000786	R-CARBON	47KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R625	2001-001088	R-CARBON(S)	1KOHM,5%,1/2W,AA,TP,2.4X6.4M	
RL601	3501-001111	RELAY-POWER	12Vdc,250mW,5A,1FormA,15mS,5	⚠
SW201	3404-000244	SWITCH-TACT	15V,20mA,90-170gf,7.5x7mm,SP	
SW202	3404-000244	SWITCH-TACT	15V,20mA,90-170gf,7.5x7mm,SP	
SW203	3404-000244	SWITCH-TACT	15V,20mA,90-170gf,7.5x7mm,SP	
SW204	3404-000244	SWITCH-TACT	15V,20mA,90-170gf,7.5x7mm,SP	
SW205	3404-000244	SWITCH-TACT	15V,20mA,90-170gf,7.5x7mm,SP	
SW206	3404-000244	SWITCH-TACT	15V,20mA,90-170gf,7.5x7mm,SP	
SW207	3404-000244	SWITCH-TACT	15V,20mA,90-170gf,7.5x7mm,SP	
SW208	3404-000244	SWITCH-TACT	15V,20mA,90-170gf,7.5x7mm,SP	
SW209	3404-000244	SWITCH-TACT	15V,20mA,90-170gf,7.5x7mm,SP	
SW210	3404-000244	SWITCH-TACT	15V,20mA,90-170gf,7.5x7mm,SP	
SW601	3403-001050	SWITCH-PUSH	30V,0.3A,SPDT,ON-OFF,PC BORD	
T401	BH26-30336A	TRANS-HOR.DRIVE	9.6MH,6P,EE2017,SB-5S,9	
T501	BH26-00015A	TRANS-FBT	1.20MH,12P,FUR3658,SM19C,F	⚠
T601	BH26-00024A	TRANS-POWER	390UH,16P,EER 3541,PL3,PM2,J	⚠
T602	BH26-30302S	TRANS-SYNC.	3-1(250UH),SB-5S,UU1116	⚠
TH601	1404-000002	THERMISTOR-PTC	9ohm,20%,TR,RECT	
TH602	1404-001020	THERMISTOR-NTC	8ohm,15%,17mW/C,BK	
VR501	2103-000493	VR-SEMI	5Kohm,30%,1/10W,SIDE	
X201	2801-000005	CRYSTAL-UNIT	8MHz,50ppm,28-AAM,S,35ohm	

8-2 Video PCB Parts

Loc. No.	Code No.	Description	Specification	Remarks
BD101	3301-000011	CORE-FERRITE BEAD	AA,3.5x1.0x5.7mm,1500	
BD102	3301-000011	CORE-FERRITE BEAD	AA,3.5x1.0x5.7mm,1500	
BD104	3301-000011	CORE-FERRITE BEAD	AA,3.5x1.0x5.7mm,1500	
BD105	3301-000011	CORE-FERRITE BEAD	AA,3.5x1.0x5.7mm,1500	
C101B	2401-000028	C-AL	10uF,20%,50V,GP,TP,5x11,5	
C101G	2401-000028	C-AL	10uF,20%,50V,GP,TP,5x11,5	
C101R	2401-000028	C-AL	10uF,20%,50V,GP,TP,5x11,5	
C103B	2301-000010	C-FILM,PEF	100nF,5%,100V,TP,11.5x12.5mm	
C103G	2301-000010	C-FILM,PEF	100nF,5%,100V,TP,11.5x12.5mm	
C103R	2301-000010	C-FILM,PEF	100nF,5%,100V,TP,11.5x12.5mm	
C104B	2202-002009	C-CERAMIC,MLC-AXIAL	100nF,+80-20%,50V,Y5	
C104G	2202-002009	C-CERAMIC,MLC-AXIAL	100nF,+80-20%,50V,Y5	
C104R	2202-002009	C-CERAMIC,MLC-AXIAL	100nF,+80-20%,50V,Y5	
C106B	2401-000043	C-AL	1uF,20%,160V,GP,TP,6.3x11,5	
C106G	2401-000043	C-AL	1uF,20%,160V,GP,TP,6.3x11,5	
C106R	2401-000043	C-AL	1uF,20%,160V,GP,TP,6.3x11,5	
C107	2301-000010	C-FILM,PEF	100nF,5%,100V,TP,11.5x12.5mm	
C110	2202-002009	C-CERAMIC,MLC-AXIAL	100nF,+80-20%,50V,Y5	
C111	2401-000042	C-AL	100uF,20%,16V,GP,TP,6.3x7,5	
C112	2202-002009	C-CERAMIC,MLC-AXIAL	100nF,+80-20%,50V,Y5	
C113	2401-000033	C-AL	100uF,20%,100V,GP,TP,12.5x20,5	
C114	2401-000043	C-AL	1uF,20%,160V,GP,TP,6.3x11,5	
C115	2202-002009	C-CERAMIC,MLC-AXIAL	100nF,+80-20%,50V,Y5	
C116	2401-000042	C-AL	100uF,20%,16V,GP,TP,6.3x7,5	
C117	2202-002009	C-CERAMIC,MLC-AXIAL	100nF,+80-20%,50V,Y5	
C118	2201-000154	C-CERAMIC,DISC	10nF,+80-20%,2KV,Y5P,TP,2	
C119	2201-000291	C-CERAMIC,DISC	1nF,10%,500V,Y5P,TP,8.5x5	
C120	2202-002009	C-CERAMIC,MLC-AXIAL	100nF,+80-20%,50V,Y5	
C121	2202-002009	C-CERAMIC,MLC-AXIAL	100nF,+80-20%,50V,Y5	
C123	2202-002009	C-CERAMIC,MLC-AXIAL	100nF,+80-20%,50V,Y5	
C124	2401-000042	C-AL	100uF,20%,16V,GP,TP,6.3x7,5	
C125	2201-000021	C-CERAMIC,DISC	100nF,+80-20%,50V,Y5V,TP	
C126	2202-002009	C-CERAMIC,MLC-AXIAL	100nF,+80-20%,50V,Y5	
C127	2401-000603	C-AL	1uF,20%,50V,GP,TP,5x11,5	
CN102	BH71-40300A	PIN-HINGE	BRASS,D2.36,SN,HEAT/SINK	
CN103	BH71-40300A	PIN-HINGE	BRASS,D2.36,SN,HEAT/SINK	
CN105	BH39-00026A	CBF-HARNESS	11P/11P,180MM,BLU/RED/GRY/WH	
CN202_2	3711-004228	CONNECTOR-HEADER	BOX,6P,1R,2MM,ANGLE,SN	
D101B	0401-000005	DIODE-SWITCHING	1N4148,75V,200MA,DO-35,T	
D101G	0401-000005	DIODE-SWITCHING	1N4148,75V,200MA,DO-35,T	
D101R	0401-000005	DIODE-SWITCHING	1N4148,75V,200MA,DO-35,T	
D102B	0401-000005	DIODE-SWITCHING	1N4148,75V,200MA,DO-35,T	
D102G	0401-000005	DIODE-SWITCHING	1N4148,75V,200MA,DO-35,T	
D102R	0401-000005	DIODE-SWITCHING	1N4148,75V,200MA,DO-35,T	
D103B	0401-000005	DIODE-SWITCHING	1N4148,75V,200MA,DO-35,T	
D103G	0401-000005	DIODE-SWITCHING	1N4148,75V,200MA,DO-35,T	
D103R	0401-000005	DIODE-SWITCHING	1N4148,75V,200MA,DO-35,T	

Loc. No.	Code No.	Description	Specification	Remarks
IC101	1201-001315	IC-VIDEO AMP	2504,DIP,24P,300MIL,SINGLE	⚠
IC103	BH13-00007A	IC-HYBRID	COLOR MONITOR,LM2439,TO-220-9L	⚠
L101B	2701-001036	INDUCTOR-AXIAL	1.2uH,10%,4.2x9.8mm	
L101G	2701-001036	INDUCTOR-AXIAL	1.2uH,10%,4.2x9.8mm	
L101R	2701-001036	INDUCTOR-AXIAL	1.2uH,10%,4.2x9.8mm	
Q101B	0501-000140	TR-SMALL SIGNAL	2N5551,NPN,625mW,TO-92	
Q101G	0501-000140	TR-SMALL SIGNAL	2N5551,NPN,625mW,TO-92	
Q101R	0501-000140	TR-SMALL SIGNAL	2N5551,NPN,625mW,TO-92	
Q102B	0501-000138	TR-SMALL SIGNAL	2N5401,PNP,625mW,TO-92,T	
Q102G	0501-000138	TR-SMALL SIGNAL	2N5401,PNP,625mW,TO-92,T	
Q102R	0501-000138	TR-SMALL SIGNAL	2N5401,PNP,625mW,TO-92,T	
R102B	2001-000666	R-CARBON	33OHM,5%,1/8W,AA,TP,1.8X3.2MM	
R102G	2001-000666	R-CARBON	33OHM,5%,1/8W,AA,TP,1.8X3.2MM	
R102R	2001-000666	R-CARBON	33OHM,5%,1/8W,AA,TP,1.8X3.2MM	
R103B	2001-000969	R-CARBON	75OHM,5%,1/8W,AA,TP,1.8X3.2MM	
R103G	2001-000969	R-CARBON	75OHM,5%,1/8W,AA,TP,1.8X3.2MM	
R103R	2001-000969	R-CARBON	75OHM,5%,1/8W,AA,TP,1.8X3.2MM	
R104B	2001-000021	R-CARBON	27OHM,5%,1/4W,AA,TP,2.4X6.4MM	
R104G	2001-000021	R-CARBON	27OHM,5%,1/4W,AA,TP,2.4X6.4MM	
R104R	2001-000021	R-CARBON	27OHM,5%,1/4W,AA,TP,2.4X6.4MM	
R105B	2001-000011	R-CARBON	75KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R105G	2001-000011	R-CARBON	75KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R105R	2001-000011	R-CARBON	75KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R106	2001-000042	R-CARBON	1KOHM,5%,1/4W,AA,TP,2.4X6.4MM	
R107B	2001-001070	R-CARBON(S)	120OHM,5%,1/2W,AA,TP,2.4X6.4	
R107G	2001-001070	R-CARBON(S)	120OHM,5%,1/2W,AA,TP,2.4X6.4	
R107R	2001-001070	R-CARBON(S)	120OHM,5%,1/2W,AA,TP,2.4X6.4	
R108B	2001-000531	R-CARBON	240KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R108G	2001-000531	R-CARBON	240KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R108R	2001-000531	R-CARBON	240KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R110	2001-000869	R-CARBON	56OHM,5%,1/8W,AA,TP,1.8X3.2MM	
R110B	2001-000449	R-CARBON	2.2KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R110G	2001-000449	R-CARBON	2.2KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R110R	2001-000449	R-CARBON	2.2KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R111	2001-000869	R-CARBON	56OHM,5%,1/8W,AA,TP,1.8X3.2MM	
R112	2001-000835	R-CARBON	51KOHM,5%,1/4W,AA,TP,2.4X6.4MM	
R113B	2001-000281	R-CARBON	100OHM,5%,1/8W,AA,TP,1.8X3.2MM	
R113G	2001-000281	R-CARBON	100OHM,5%,1/8W,AA,TP,1.8X3.2MM	
R113R	2001-000281	R-CARBON	100OHM,5%,1/8W,AA,TP,1.8X3.2MM	
R114	2001-000511	R-CARBON	220OHM,5%,1/2W,AA,TP,3.3X9MM	
R115	2001-000281	R-CARBON	100OHM,5%,1/8W,AA,TP,1.8X3.2MM	
R116	2001-000281	R-CARBON	100OHM,5%,1/8W,AA,TP,1.8X3.2MM	
R117	2001-000005	R-CARBON	390OHM,5%,1/8W,AA,TP,1.8X3.2MM	
R118	2001-000005	R-CARBON	390OHM,5%,1/8W,AA,TP,1.8X3.2MM	
R119	2001-000005	R-CARBON	390OHM,5%,1/8W,AA,TP,1.8X3.2MM	
R627	2001-000613	R-CARBON	3.9KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
S/VID	6502-000001	CABLE CLAMP	DAWH-5NB,D15,L35,NTR,NYLON66	

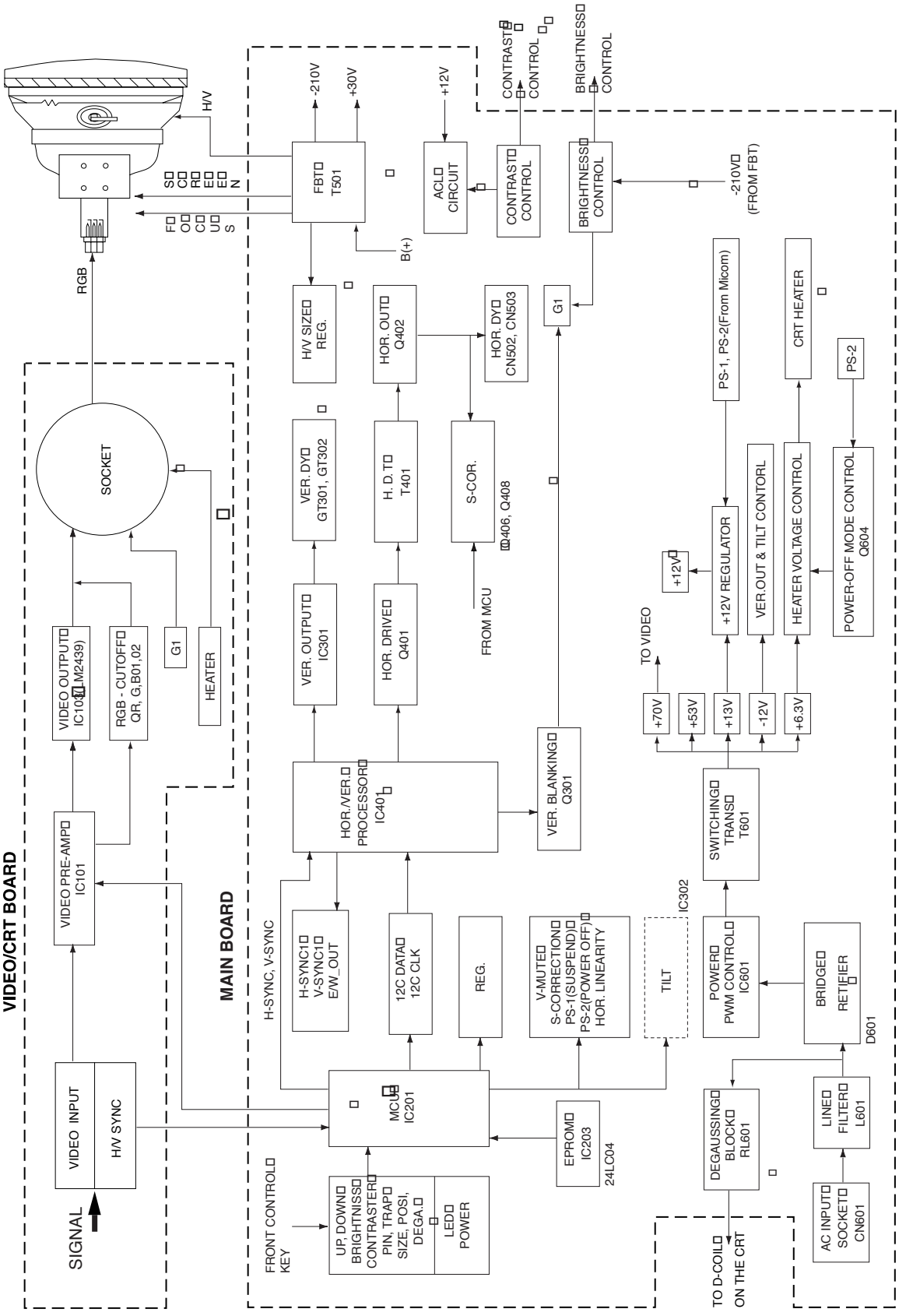
Loc. No.	Code No.	Description	Specification	Remarks
SK101	4715-000001	SURGE ABSORBER	1KV,+50-10%	
SK102	1405-001064	SURGE ABSORBER	400V,20%,AXIAL	
SK103	3704-001014	SOCKET-CRT	12P,22.5PI,26.5PI,SN	

Others

Loc. No.	Code No.	Description	Specification	Remarks
⚠ CRT	BH03-10337W	CRT-COLOR	15,0.28,M36KUK35X02(E/LP),SING	DP15LS/LT
	BH03-10338J	CRT-COLOR	14,0.28,M34QBH351X122,SINGLE	DP14LS/LT
MAGNET	3302-000006	MAGNET-RUBBER	AF,14G,1620-1980G,0.58-0.9	
ASS'Y PBA UNIT	BH94-00045B	ASSY,PCB	DP15LS/LT	
	BH94-00045C	ASSY,PCB	DP14LS/LT	
B/D ASS'Y	BH98-00035B	ASSY,PCB/MAIN	DP15LS/LT	
	BH98-00035C	ASSY,PCB/MAIN	DP14LS/LT	
	BH98-00041C	ASSY,PCB/VIDEO	DP15LS/LT,DP14LS	
	BH98-00041B	ASSY,PCB/VIDEO	DP15LS/LT	
D/COIL	BH27-00009A	COIL-DEGAUSSING	300*240*1060MM,7.2MH,22.	15"
	BH27-00011A	COIL-DEGAUSSING	240*215*900MM,6.0MH,18.8	14"
CRT-GND	BH39-00017A	CBF-HARNESS	1P,320MM,BLK,UL1015/3*0.16TA	DP15LS/LT
	BH39-00030A	CBF-HARNESS	285MM,BLK,UL1015,AWG18,YFH	DP14LS/LT
SIGNAL-CABLE	BH39-00022A	CBF-SIGNAL	ATT,1200MM,15P/16P,7P,IVORY	14"
SIGNAL-CABLE	BH39-00023A	CBF-SIGNAL	ATT,1500MM,15P/6P,7P,IVORY	15"
WIRE-GND	BH39-00025A	CBF-HARNESS	150MM,BLK,UL1015,AWG18,350	14"
WIRE-GND	BH39-00024A	CBF-HARNESS	200MM,BLK,UL1015,AWG18,350	14"
P/CORD	BH39-10007A	CBF POWER/CORD	DET,H05VV-F,250V/6A,IVY,1830MM	
	BH39-10339E	CBF POWER/CORD	DET,SVT,125V 7A/10A,IVY,1830MM	

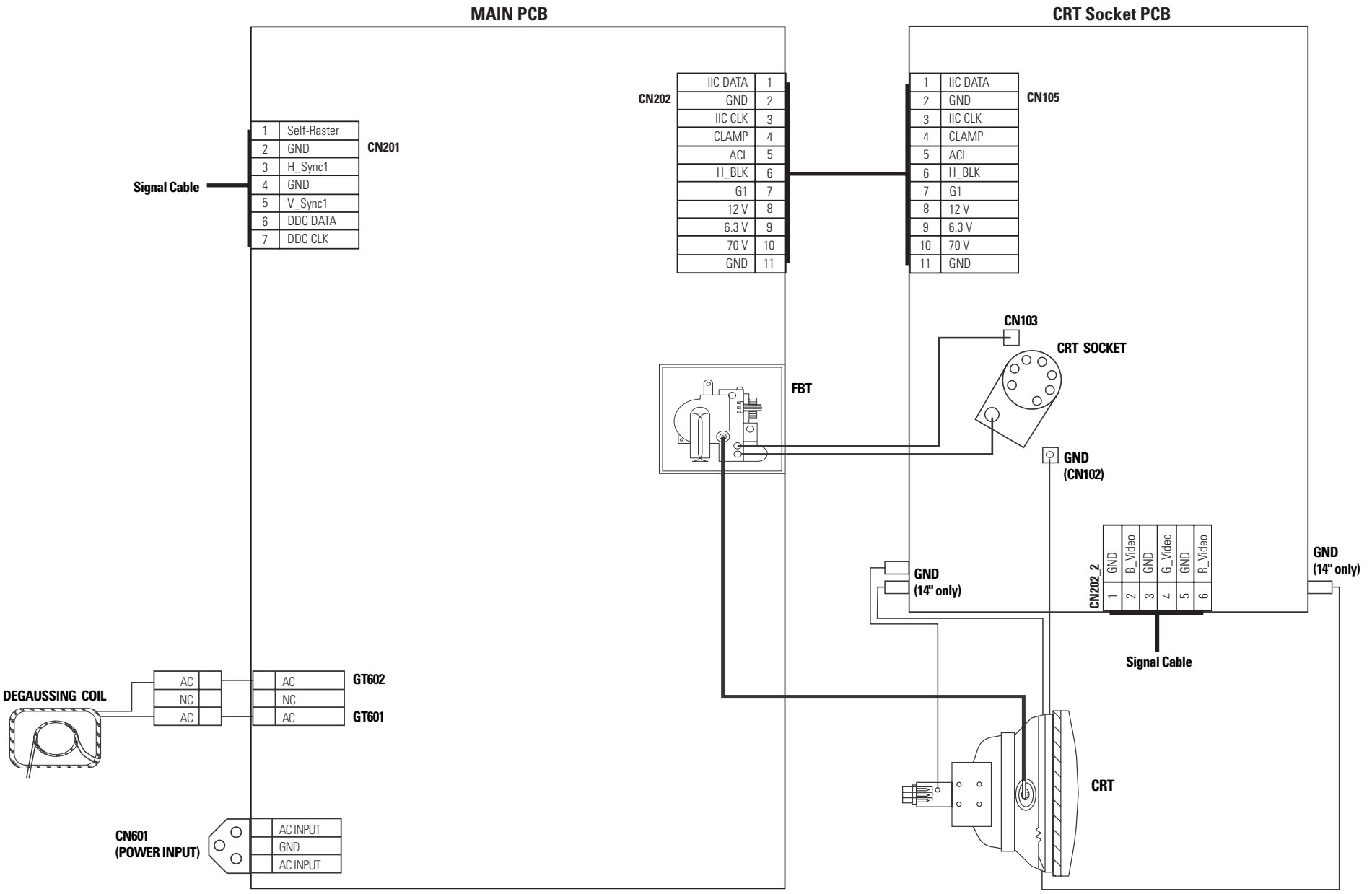
Memo

9 Block Diagrams



Memo

10 Wiring Diagram



11 Schematic Diagrams

11-1 Power Part Schematic Diagram

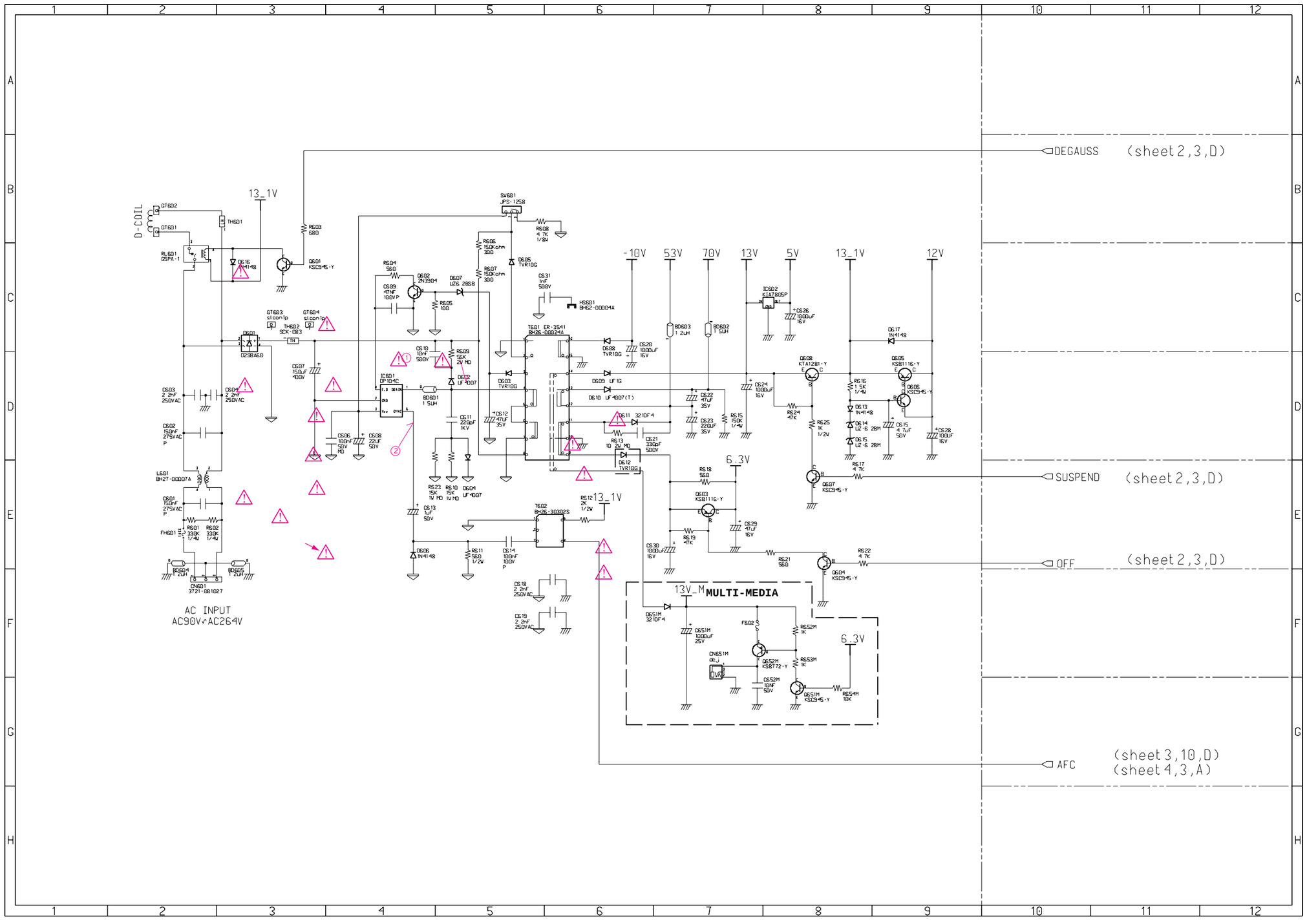


Table 11-1. IC601 (DP104C)

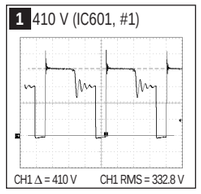
pin #	MODES	
	800 x 600 / 85 Hz	640 x 480 / 60 Hz
1	325.2	321.6
2	GND	GND
3	20.66	20.38
4	1.55	1.876
5	5.156	5.12

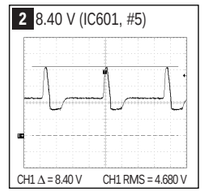
Unit: Vrms

Table 11-2. IC602 (KIA7805P)

pin #	MODES	
	800 x 600 / 85 Hz	640 x 480 / 60 Hz
1	13.55	13.48
2	GND	GND
3	5.15	5.15

Unit: Vrms





11-2 Micom Part Schematic Diagram

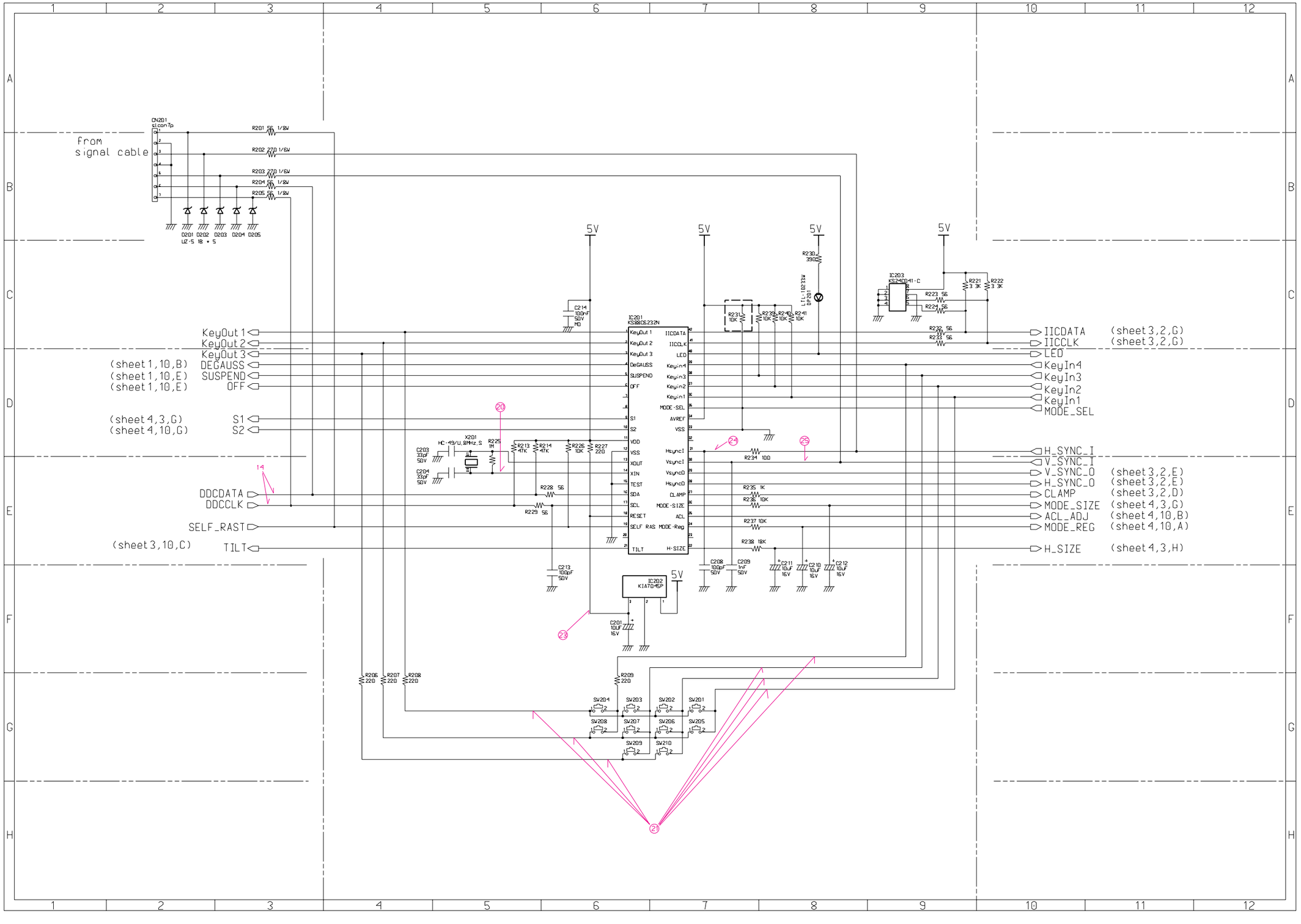


Table 11-3. IC201 (DM104)

pin #	MODES		pin #	MODES	
	800 x 600 / 85 Hz	640 x 480 / 60 Hz		800 x 600 / 85 Hz	640 x 480 / 60 Hz
1	–	–	22	2.732	2.732
2	0	0	23	–	–
3	0	0	24	–	–
4	0	0	25	2.98	2.98
5	0	0	26	3.76	3.76
6	4.92	4.92	27	5.02	5.06
7	–	–	28	1.236	1.716
8	–	–	29	1.066	1.132
9	5.092	5.092	30	1.12	4.62
10	5.092	5.092	31	1.2	4.8
11	5.124	5.124	32	–	–
12	GND	GND	33	GND	GND
13	3.212	3.212	34	5.08	5.08
14	2.952	2.952	35	5.1	5.12
15	GND	GND	36	5.108	5.108
16	2.1	2.1	37	5.1	5.1
17	3.546	3.546	38	5.1	5.1
18	5.08	5.08	39	5.1	5.1
19	0	0	40	0	0
20	–	–	41	5.116	5.116
21	3.644	3.644	42	5.116	5.116

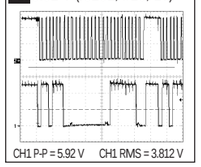
Unit: Vrms

Table 11-4. IC203 (KS24C04)

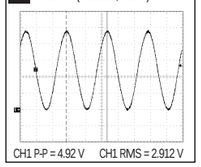
pin #	MODES	
	800 x 600 / 85 Hz	640 x 480 / 60 Hz
1	GND	GND
2	GND	GND
3	GND	GND
4	GND	GND
5	4.16	4.16
6	3.92	3.92
7	GND	GND
8	5.12	5.12

Unit: Vrms

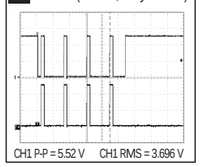
14 5.92 V (IC201, #16, 17)



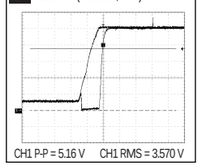
20 4.92 V (IC201, #14)



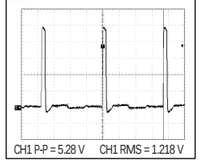
21 5.52 V (IC201, Keyin/out)



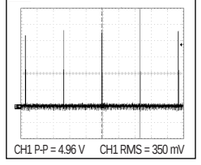
23 5.16 V (IC202, #3)



24 5.28 V (IC201, #31)



25 4.96 V (IC201, #30)



11-3 HOR./VER. Part Schematic Diagram

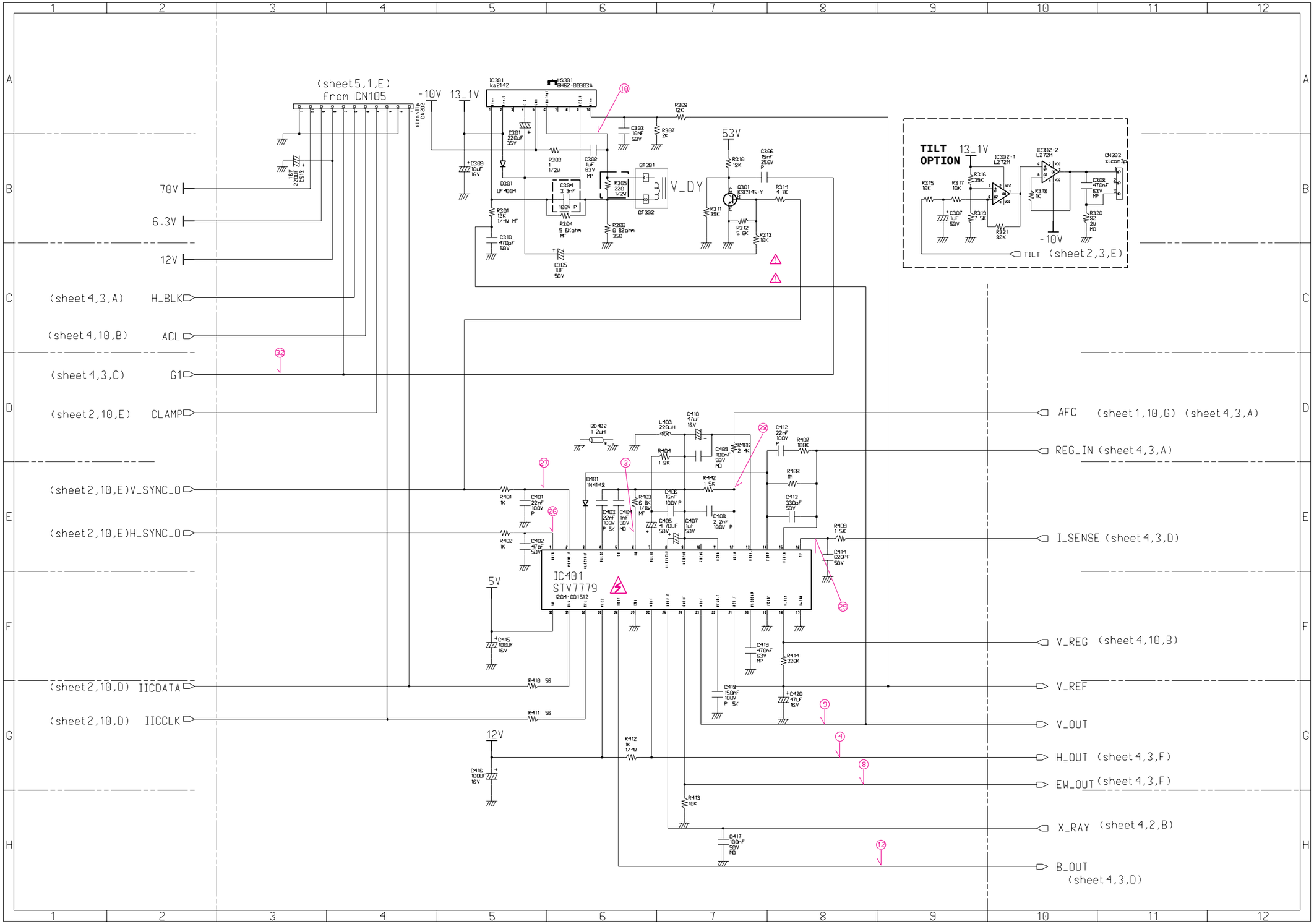


Table 11-5. IC301 (KA2142)

pin #	MODES	
	800 x 600 / 85 Hz	640 x 480 / 60 Hz
1	1.21	1.21
2	13.52	13.45
3	–	–
4	11.25	11.21
5	10.97	10.97
6	18.04	18.6
7	–	–
8	–	–
9	13.2	13.2
10	1.52	1.52

Unit: Vrms

Table 11-6. IC302 (LM272)

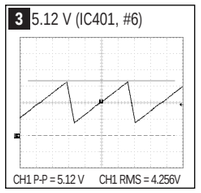
pin #	MODES	
	800 x 600 / 85 Hz	640 x 480 / 60 Hz
1	100 mV	0
2	13.4	13.4
3	100 mV	0
4	10.8	10.8
5	100 mV	0
6	100 mV	0
7	2.2	2.2
8	2.2	2.2

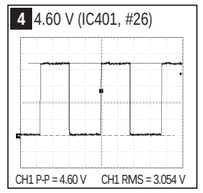
Unit: Vrms

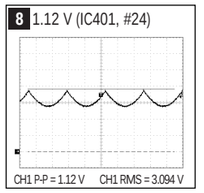
Table 11-7. IC401 (STV7779)

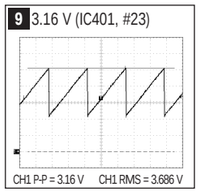
pin #	MODES		pin #	MODES	
	800 x 600 / 85 Hz	640 x 480 / 60 Hz		800 x 600 / 85 Hz	640 x 480 / 60 Hz
1	1.23	1.71	17	GND	GND
2	0	0	18	6.89	6.89
3	5.15	5.15	19	GND	GND
4	2.5	3.04	20	5.22	5.43
5	4.31	4.31	21	8.12	8.12
6	4.58	2.78	22	3.05	3.05
7	4.59	2.78	23	3.58	3.58
8	3.25	3.41	24	3	2.9
9	GND	GND	25	2.03	2.77
10	–	–	26	2.98	3.25
11	0	0	27	GND	GND
12	410 mV	500 mV	28	7.19	4.7
13	8	8	29	12.22	12.22
14	3.59	2.9	30	4	3.85
15	4.74	4.8	31	4.15	4.15
16	0	160 mV	32	5.16	5.16

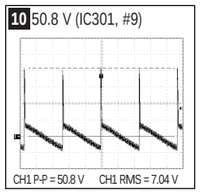
Unit: Vrms

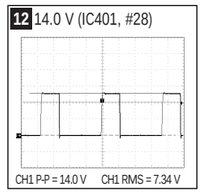


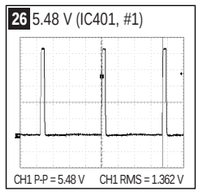


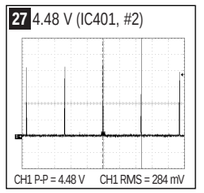


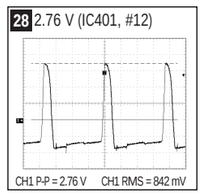


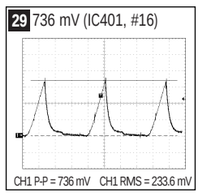


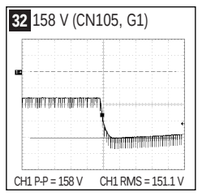




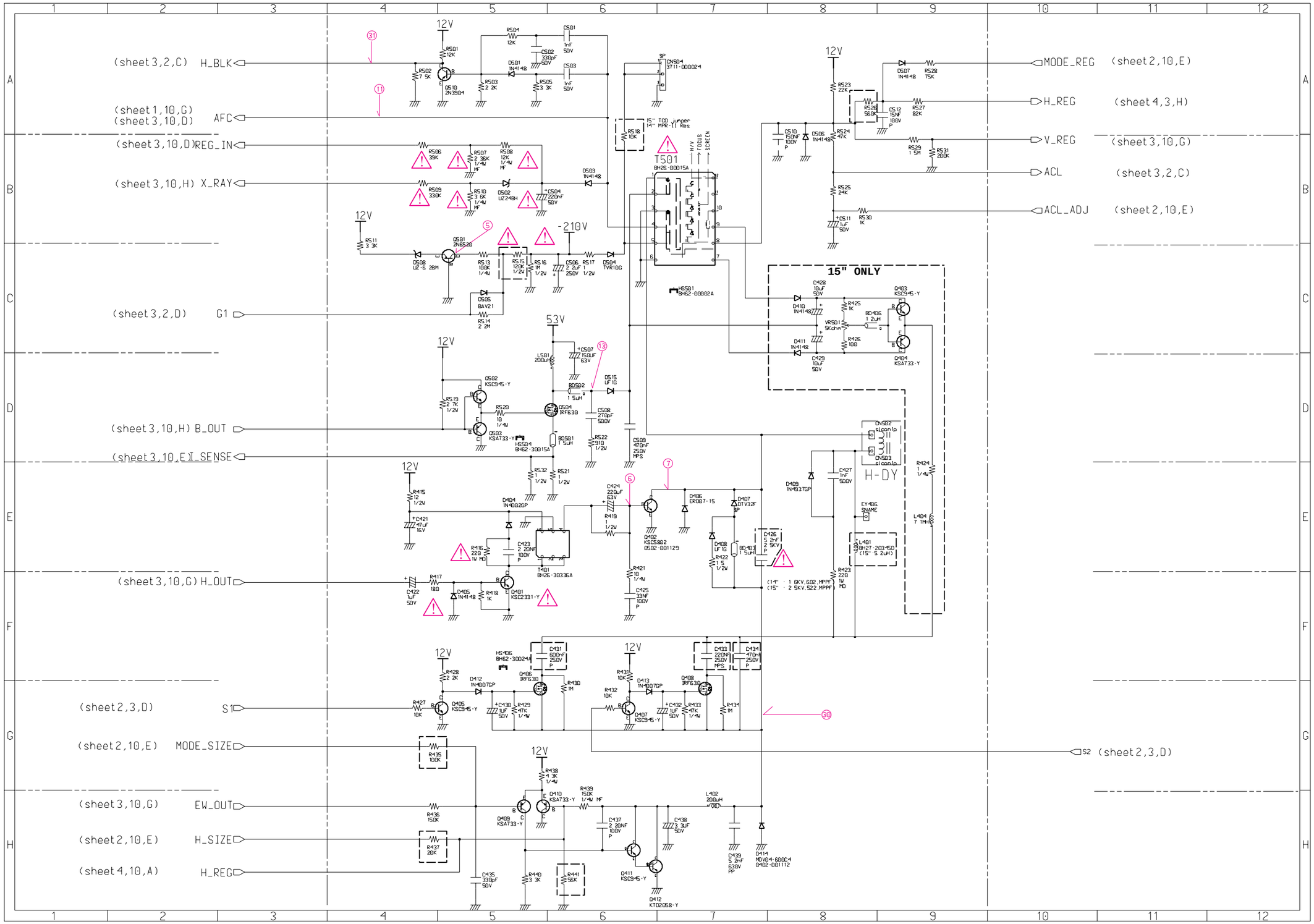




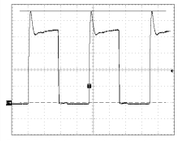




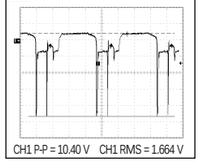
11-4 H_OUT Part Schematic Diagram



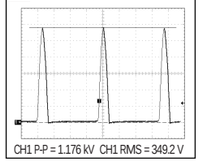
5 28.4 V (Q501, Collector)



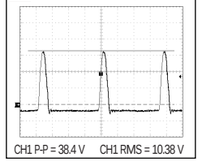
6 10.40 V (Q402, Base)



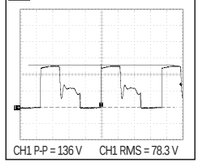
7 1.176 kV (Q402, Collector)



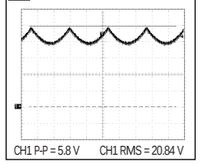
11 38.4 V (T501, #4)



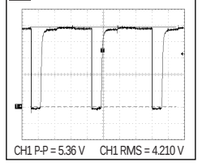
13 136 V (Q504, Drain)



30 5.8 V (Q412, Collector)



31 5.36 V (Q510, Collector)



11-5 Video Part Schematic Diagram

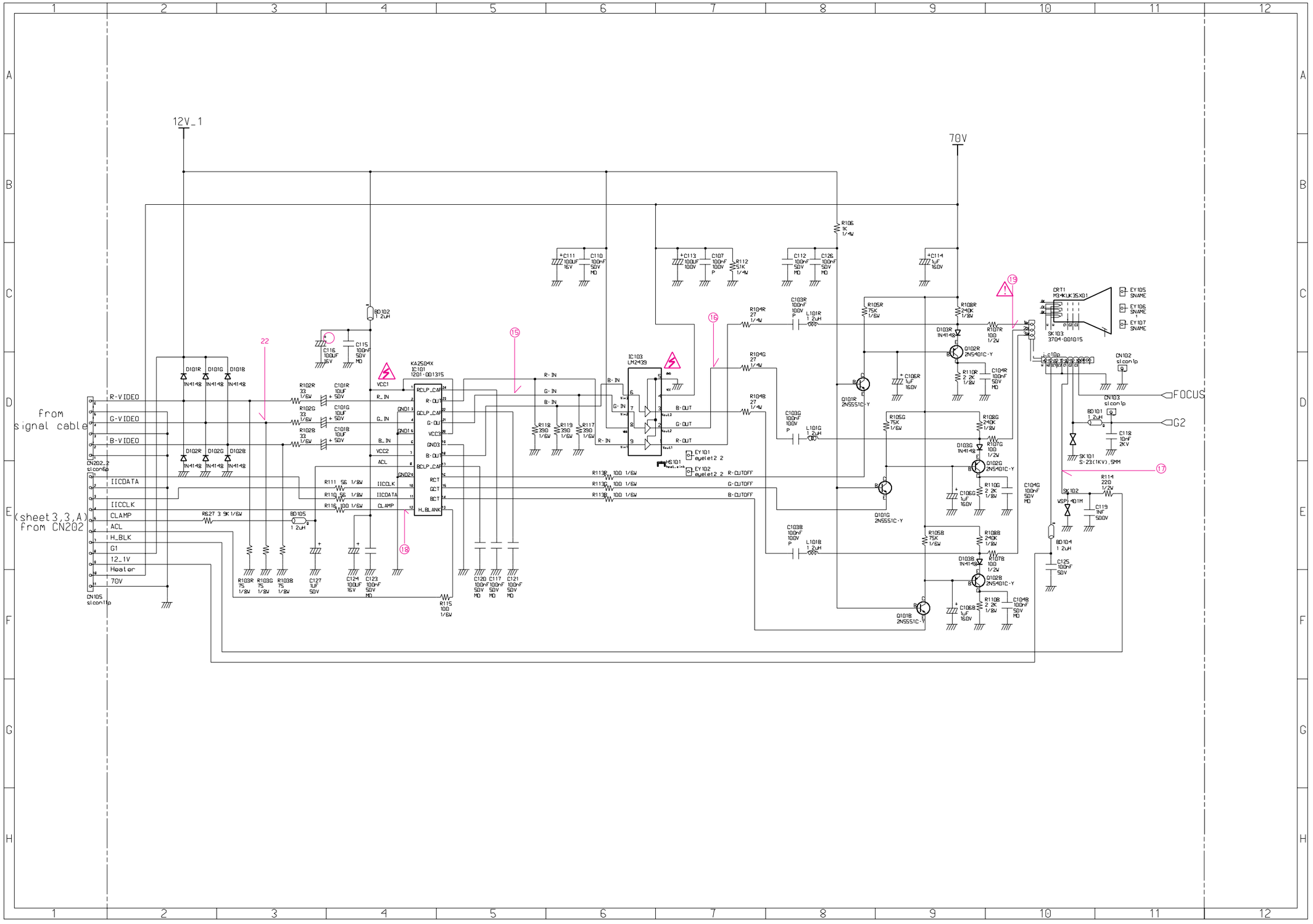


Table 11-8. IC101 (KA2504)

pin #	MODES		pin #	MODES	
	800 x 600 / 85 Hz	640 x 480 / 60 Hz		800 x 600 / 85 Hz	640 x 480 / 60 Hz
1	11.6	11.6	13	4.4	4.4
2	800 mV	800 mV	14	11.2	11.2
3	GND	GND	15	11.2	11.2
4	800 mV	800 mV	16	11.2	11.2
5	GND	GND	17	4.2	4.2
6	800 mV	800 mV	18	1.2	1.2
7	11.6	11.6	19	GND	GND
8	3.6	3.6	20	11.6	11.6
9	GND	GND	21	1.2	1.2
10	5.8	5.8	22	4.0	4.0
11	5.8	5.8	23	1.4	1.4
12	5.8	5.8	24	4.2	4.2

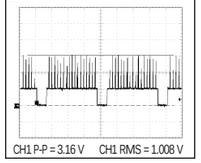
Unit: Vrms

Table 11-9. IC103 (LM2439)

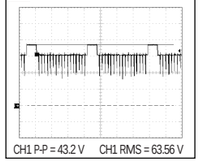
pin #	MODES	
	800 x 600 / 85 Hz	640 x 480 / 60 Hz
1	45.4	44.6
2	45.4	44.2
3	45.0	44.0
4	71.0	71.0
5	GND	GND
6	1.2	1.2
7	1.2	1.2
8	11.8	11.8
9	1.2	1.2

Unit: Vrms

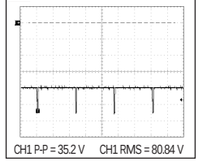
15 3.16 V (IC101, #21)



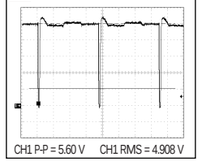
16 43.2 V (IC103, #3)



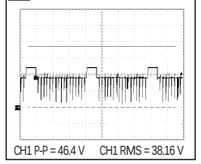
17 35.2 V (SK103, G1)



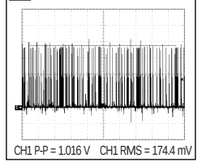
18 5.60 V (IC101, #12)



19 46.4 V (SK103, G)



22 1.016 V (CN202_2, #2,4,6)



Memo